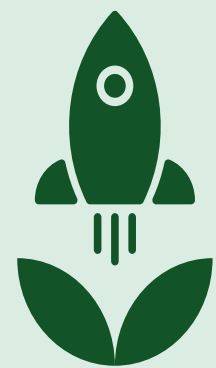


Foodbytes 2024 EOY Report

Harnessing Sustainable Business Models to Catalyze Growth

Discover solutions and find partners to power tomorrow's sustainable food system today.



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Foodbytes gives your solution visibility to Rabobank's global network of potential investors and commercial partners.



Are you a Corporate, Investor, or other industry player?

Foodbytes gives you access to the global F&A startup ecosystem and supports your core business strategy with market intelligence and analysis.

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Foodtech
40%
Agtech

20K
Social Reach

102
Countries
Represented



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Contents



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Featured Rabo Experts



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Rabobank Regenerative Agriculture Expert



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2024 EOY Report: Executive Summary

Companies are facing uncertainty as they set their strategies for the coming year. Sustainability agendas have seen a slowdown, with fewer net zero goals set by food and agriculture companies compared to 2020. Many sustainability mandates and measures remain inconsistent across regions, with [friction](#) evident post-COP29 on reaching global consensus for climate financing. Strategies and priorities are also expected to shift with the new administration in the United States, including a likely pullout from the Paris Agreement. While the full impact of a Trump presidency remains uncertain, Foodbytes maintains that the need for innovation, particularly in the areas covered in this report, will drive value for the food industry regardless of the regulatory environment.

Foodbytes believes innovation in sustainability can build business advantages. Instead of waiting for regulations, businesses should identify sustainability areas that offer near-term benefits by improving core operations. During Foodbytes’ October roundtable focused on partnering for the food transition, **Terryn Lawrence, Rabobank North America Chief Sustainability Officer** said, “Increasingly, sustainability is becoming integral to all strategic discussions. It is no longer peripheral to the business. This is an exciting era, but it demands consistency, data transparency and ongoing dialogue.”

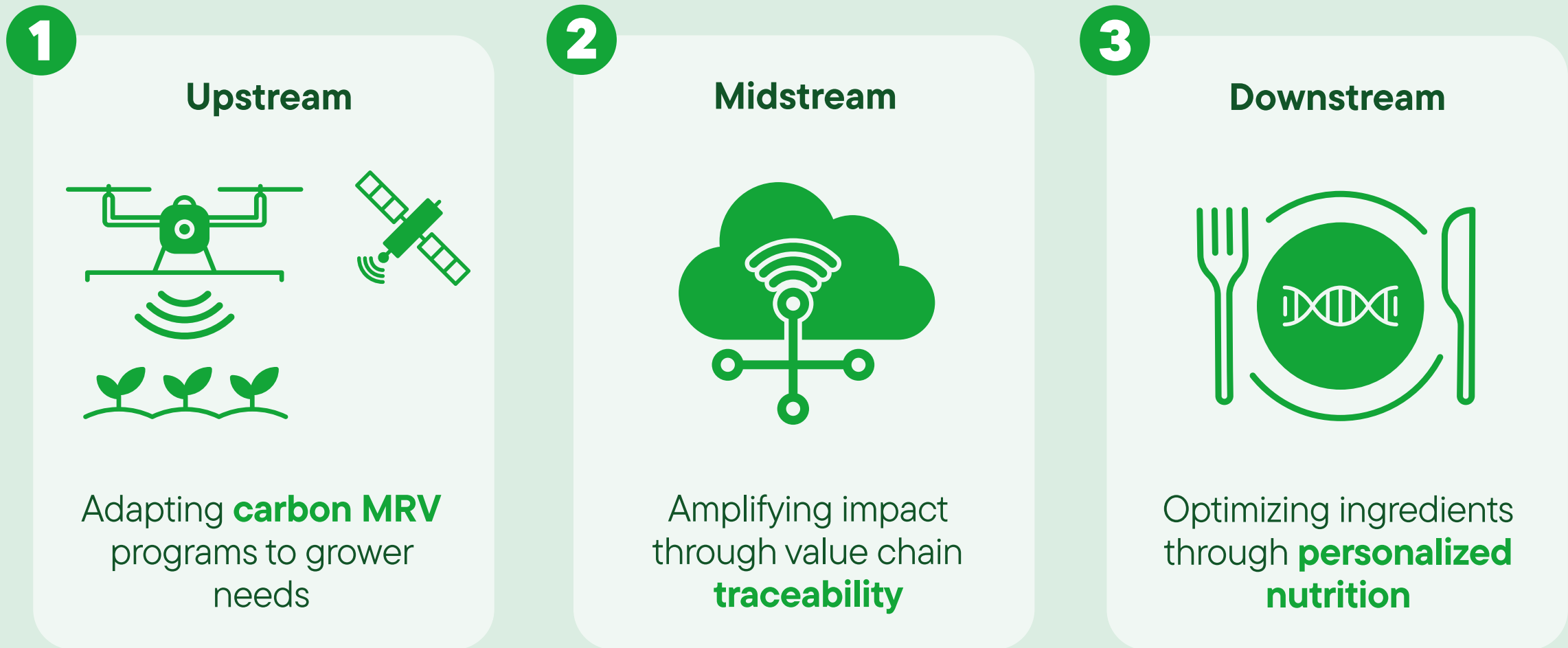
Integrating sustainability into core operations can positively impact costs, with some areas offsetting adoption costs even more quickly than others. For example, as noted in a [report](#) from RaboResearch Analyst Matthew Lewis, integrating sustainability into procurement can reduce costs by up to 16%, while precision application can cut on-farm chemical costs by 30-50%. Down the value chain, there is continued backlash against greenwashing, and consumers, responding to inflation, are prioritizing low prices over sustainability. According to [SPINS](#), environmental sustainability claims decreased six percent in importance among consumers from 2022 to 2023. Despite

this downstream perception of sustainability claims, in practice, integrating sustainable technologies enables companies to capture more margin and cut overall costs by improving resource management and quality control. In fact, a McKinsey [study](#) found that among companies with financial success, those that also deliver sustainability benefits actually outperform their peers on shareholder value. Additionally, these technologies set operations up for longer term alignment with consumer demands for transparency and products that satisfy evolving nutritional needs.

In this report, we focus on three food system areas with outsized potential for startups, corporates and investors to reimagine sustainable business models, creating near- and long-term value and carrying it through the supply chain.

3 Developing F&A Sub-sectors with Massive Sustainable Advantages

These topics were derived from an analysis of 2023 Foodbytes hub user behavior, pitch deck data and surveys of the Foodbytes community.



In This Report

50 global startups in the Market Map, poised for industry impact and actively seeking investment/corporate collaboration.

3 proprietary Foodbytes hub search data trend dives, including the rise of “carbon capture,” “dynamic pricing” and “immune health.”

13 Rabobank sector experts quoted from RaboResearch, Rabo Ventures and Foodbytes.

4 contemporary case studies of corporate/investor and startup collaboration and **3** startup spotlights, including:



Happy innovating,

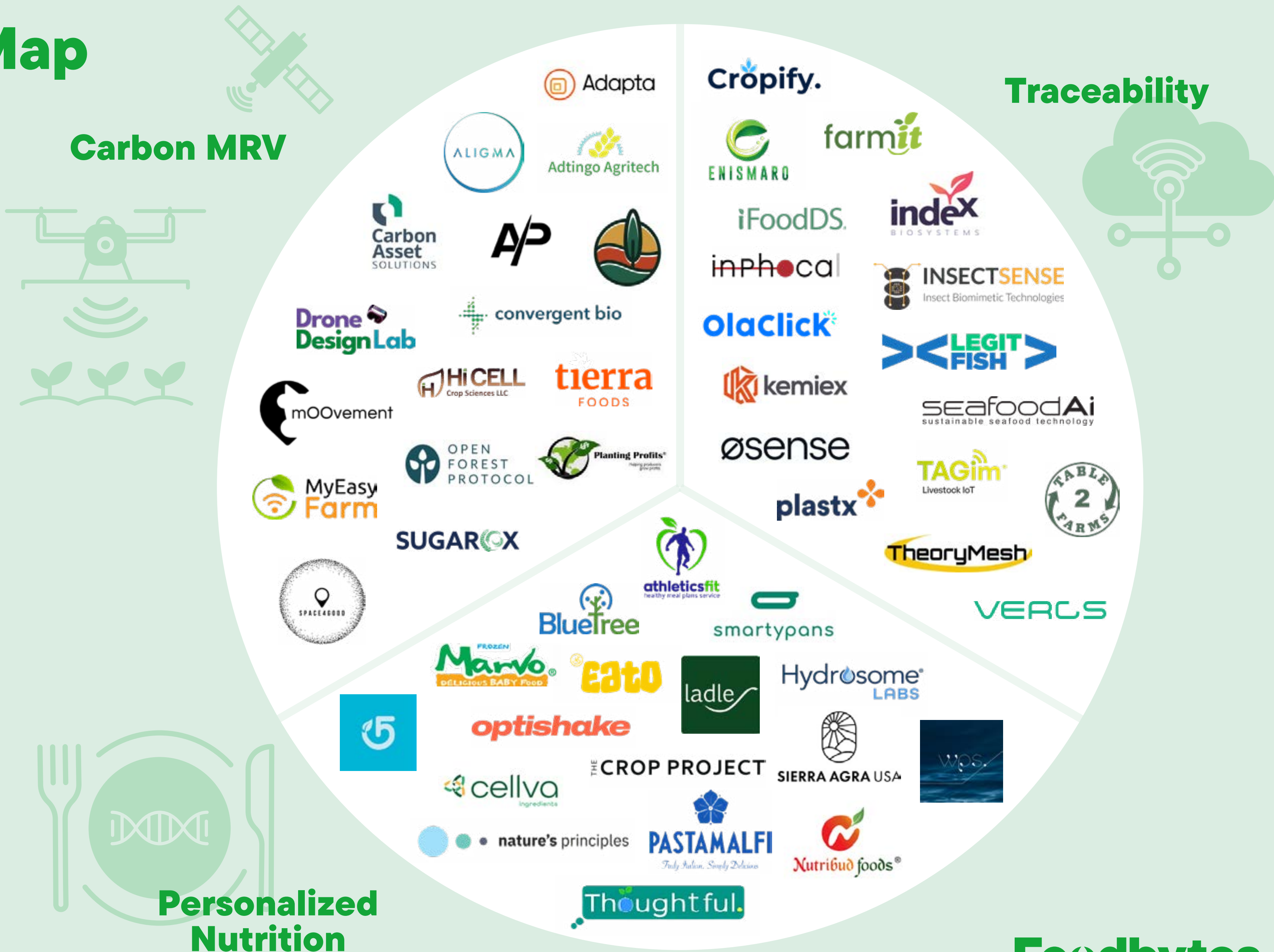
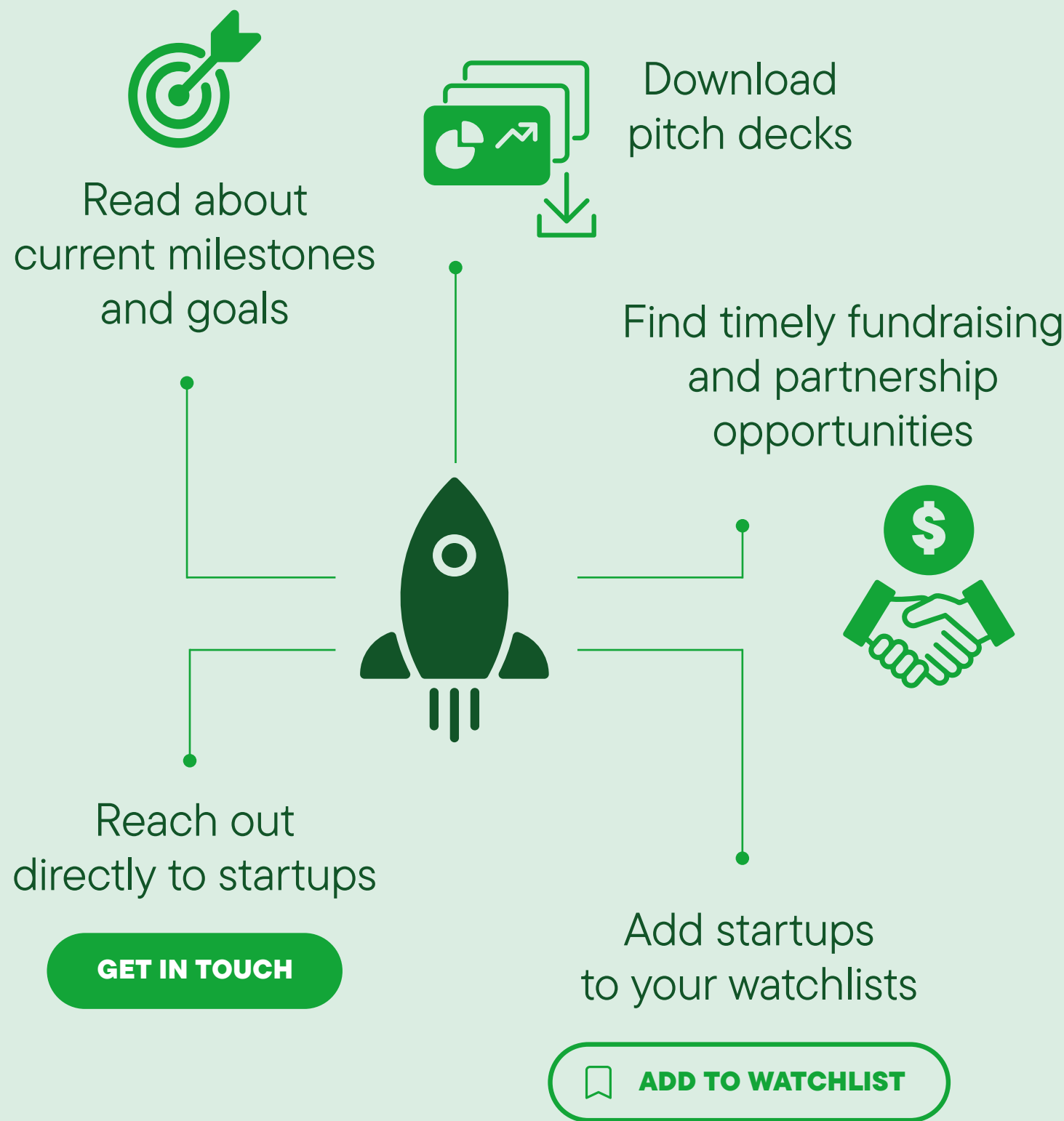
The Foodbytes Team



2024 EOY Market Map

These 50 startups joined the hub or updated their Foodbytes profiles in August and September 2024.

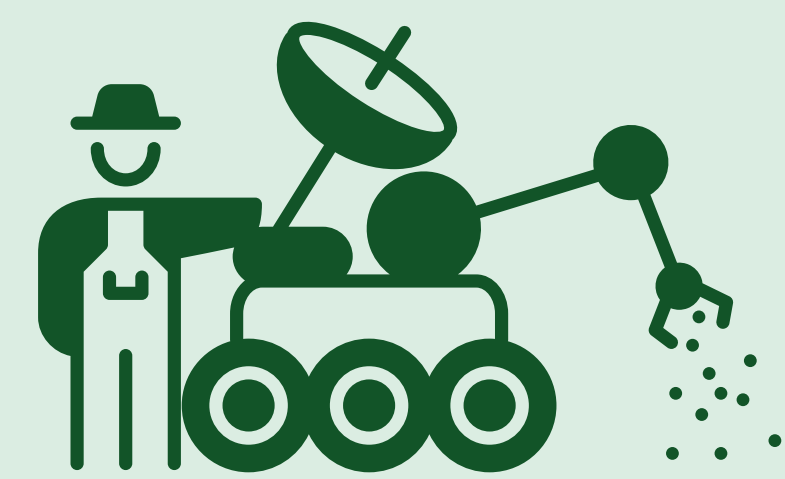
Click on their logos or the [appendix](#) to go to their hub profiles, learn more and kickstart connection.



What Innovation Looks Like in Carbon MRV

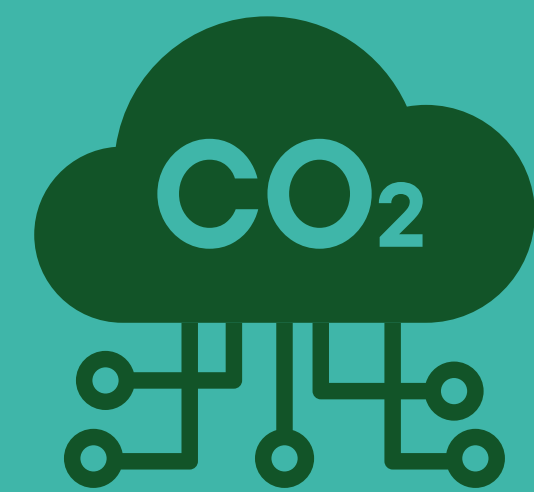
Ag Data Capturing Devices

The use of advanced sensors in agriculture is revolutionizing data collection. Sensors measuring soil moisture, temperature and humidity, as well as remote-sensing technologies like drones and satellites, provide real-time data that helps farmers make informed decisions about crop management. This data is crucial for improving yields, reducing waste and ensuring sustainable farming practices.



Integrated MRV Platforms

Monitoring, reporting and verification (MRV) platforms are becoming essential for tracking and verifying agricultural practices. These platforms integrate data from various sources, including sensors and satellite imagery, to provide comprehensive insights into farming activities. They help ensure compliance with sustainability standards and improve transparency in the supply chain.



Carbon Removal Tech

As the agricultural sector seeks to reduce its carbon footprint, carbon removal technologies are gaining attention. These technologies include practices that sequester carbon in the soil, like biochar application, cover cropping and agroforestry. Additionally, innovations in carbon capture and storage (CCS) are being explored to further mitigate greenhouse gas emissions from farming activities.



Farmer Financing

Access to financing is critical for farmers to adopt new technologies and sustainable practices. Innovative financing models, such as microloans, crowdfunding, pay-per-use equipment financing and blockchain-based smart contracts, are being developed to provide farmers with the necessary capital. These models aim to reduce financial barriers and support the adoption of advanced agricultural technologies.



Building Sustainable Advantages through Carbon MRV

Investment Landscape

Investor interest in carbon technology is growing relative to the climate tech category, making up over half of total venture funding in 2024 compared to one-third in 2023, according to Pitchbook data. Concurrently, we're seeing more partnership and consolidation in the carbon space, such as leading European agtech company Agreena's acquisition of UK-based farm management startup, Fieldmargin. As Foodbytes has forecasted in previous reports, we expect to see more startups that promote biodiversity and soil health, reduce water consumption and track and limit methane emissions – which have 80x the warming power of carbon emissions – all while integrating with existing carbon frameworks.

Rabo Perspective

Carbon MRV (monitoring, reporting and verification) faces several challenges, including the high cost of soil sampling and the gap between modelled data and actual soil organic carbon (SOC) levels. **Rabobank Regenerative Agriculture Expert Harry Farnsworth** notes that while the accuracy of soil sampling is quickly improving, achieving real-time measurements rather than a snapshot remains difficult; however, in-field sensor technology is emerging as a solution. **Foodbytes Relationship Manager Flonja Drenofci** believes that scalable MRV solutions must provide a complementary balance of soil sampling, modelling and remote sensing. Data analytics and AI are enhancing MRV processes by improving accuracy and efficiency, particularly through real-time monitoring and anomaly detection. These



technologies help companies set targets, reduce emissions and comply with regulations – especially timely as many operators and service providers await more clarity from the EU around the Green New Deal and Carbon Removals and Carbon Farming Certificate (CRCF) Regulation. Recognizing recent regulatory progress, Farnsworth notes that “the result of COP29 has the potential to catapult the adoption of trusted carbon markets on a global level,” with the adoption of new rules designed to regulate international carbon trading more effectively – including the establishment of a centralized carbon crediting mechanism with mandatory safeguards to protect the environment and human rights.

While Farnsworth and Drenofci both note a slowdown in the number of new entrants in the space, Farnsworth adds that “it definitely seems that collaboration is becoming more of a reality as companies realize they are purchasing from the same suppliers - and MRV providers are asking farmers for the same data.” For farmers, flexible carbon credit programs that allow proactive land management without compromising carbon contracts are crucial. Collaborative programs, like the [partnership](#) between CIBO Technologies and Truterra offer more flexibility to farmers by creating opportunities to stack privately funded programs with government programs while helping companies quantify and report the impact of changes in on-farm practices in their supply sheds.

Hub Startups Leading the Charge



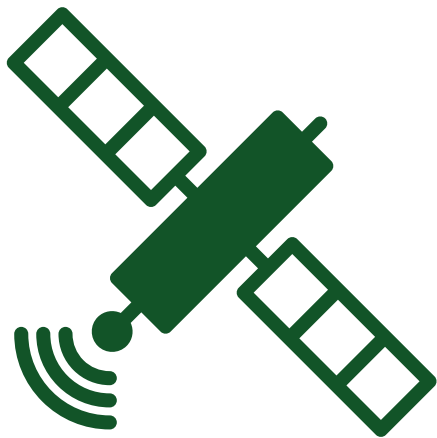
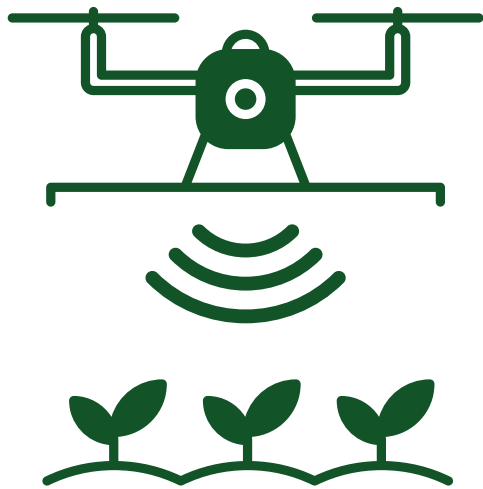
Livestock Water Recycling

Produces clean water through waste recycling equipment, enabling food producers to access revenue from biogas, validated carbon credits and natural fertilizers.



CarbonSpace

Satellite-powered carbon footprint tracking platform, applicable globally to any land-use type, including forests, croplands, wetlands, grasslands.



Trending Search Terms in the Hub

Based on overall AgTech searches conducted by corporate and investor users in 2024.



#1

“carbon capture”



#2

“carbon farming”



37% of total write-in AgTech searches



Innovation in Action
**Arva Intelligence, Kellanova,
Bartlett & Ahold Delhaize USA**

Agronomic technology and solution provider Arva Intelligence, global snacking leader Kellanova, North American agribusiness Bartlett and leading grocery retail group Ahold Delhaize USA shared their perspectives with Foodbytes on their recent collaboration: a regenerative agriculture pilot that aims to reduce Scope 3 emissions and improve resiliency from farm to pantry.

Stretching across the full value chain, this regenerative wheat pilot demonstrates the profound impacts of collaboration connected by data transparency. By working to improve on-farm environmental outcomes, there is an opportunity to increase overall sustainability across the milling and baking supply chain. In addition to addressing Scope 3 emissions and reductions, possible benefits include improving farmer livelihood and resiliency through incentive funding and maximizing ROI through co-investment that will enable financial models that incorporate sustainability.

Upstream, Bartlett will work with wheat farmers to implement regenerative practices while receiving agronomic insights from Arva to help improve farmer efficiency. Midstream, Bartlett will mill the regenerative wheat and carry that sustainable value through to Kellanova, which will then use the wheat as an ingredient for Cheez-It® and Club® crackers. Downstream, Ahold Delhaize USA’s local supermarket and online grocer brands deliver these products to end-consumers. Closing the loop and enabling exponential benefits, Arva will use their CropForce platform to measure, report and verify impacts to the respective emissions reductions, providing scalable knowledge each company can potentially take forward into the development of other Scope 3 initiatives.

Arva’s adaptable and scalable Scope-Sharing model exemplifies an integrated approach to reducing Scope 3 emissions and enables companies within shared supply



Foodbytes Food for Thought

“Demonstrating sustainability to the end consumer strengthens the impact and value proposition of tech that improves transparency and operational returns on-farm. Collaborations like this succeed because retailers and CPG corporations can address growing consumer demand for sustainability and evolve legacy brands, while growers can catalyze scale for ingredients that support an end-to-end sustainable value chain.”



Trevor Sieck
Foodbytes Startup
Relationship Manager

chains to jointly quantify and claim the impacts of sustainable agricultural practices on their emissions portfolios. With impact data shared across the full value chain, Arva’s model informs continuous optimization and fosters transparency, cooperation and distribution of sustainability gains, addressing challenges like double-counting while encouraging coordinated action. This helps ensure that programs maximize the investments made towards sustainability efforts by providing outcomes that extend beyond individual actions.

This collaborative approach is also designed to benefit the farmers behind each Cheez-It® and Club® cracker. In addition to reducing emissions, Kellanova’s Better Days™ Promise centers on improving people’s well-being, as together, crops and their respective farmers become the foundations of the ingredients produced for people to enjoy around the world. Kellanova’s responsible sourcing strategies, including a combination of direct investment at origin, third-party verification and certification and farm-level continuous improvement programs, intend to address the most salient environmental and social issues and opportunities in its supply chains. The coordinated efforts of this regenerative wheat pilot will drive value that positively impacts communities and the people who help feed them.



“It’s inspiring to see supply chain collaboration drive resilience by delivering sustainable environmental and economic outcomes on-farm. It takes an ecosystem approach, exemplified by Arva Intelligence, Kellanova, Bartlett and Ahold Delhaize USA’s collaboration, to empower farmers to feed a growing world in an ever-changing environment.”

– Michael Rinaldi, Rabobank NA Head of Sustainable Business Development

“

The partnership with Boomitra, the first one of this global leader in Colombia, is the perfect example of how we can integrate innovative technologies and sustainable practices that benefit the environment and our agricultural communities.”

– Rafael Alvarez, CEO, Alquería

Foodbytes Food for Thought

“Enablement is the operative word for technologies like Boomitra that can ease adoption for growers that recognize reducing carbon emissions as a bottom-line consideration. When implementation does not complicate existing operations, collaborations thrive. Easily integrated technologies can immediately help clients reach near-term goals, while strengthening core business operations in the long term.”



Trevor Sieck

Foodbytes Startup
Relationship Manager



Innovation in Action Boomitra & Alquería

Boomitra, an international soil carbon marketplace and Foodbytes alum, has partnered with Alquería, one of Colombia’s leading food and beverage companies and the country’s largest Certified B Corp, on a regenerative agriculture and carbon finance project to integrate carbon removal into agricultural supply chains. Together, they are advancing climate resilience by “building a scalable model for reducing greenhouse gas emissions, supporting the livelihoods of farmers and demonstrating how supply chain partnerships can drive impactful climate solutions,” the companies shared with Foodbytes.

Boomitra and Alquería will partner with more than 1,000 dairy farmers across 53,000 hectares to implement regenerative grazing practices that improve soil health, enhance biodiversity and increase carbon sequestration. Boomitra’s proprietary, AI-driven carbon MRV technology will quantify soil carbon and provide producers with actionable, real-time insights to optimize land management. Furthermore, Boomitra is piloting Mitra, a generative-AI conversational agent that will provide users with personalized advice in local languages, effectively circumventing digital and language barriers. From Boomitra’s perspective, these tools “play a vital role in ensuring that regenerative agriculture is accessible and impactful, thus enabling exponential benefits for participating farmers, communities and ecosystems.”

Over the partnership’s 40-year duration, Alquería will incorporate verified carbon credits into their supply chain and sustainability strategies, providing tangible value to their dairy producers by generating new revenue streams and building resilience in rural communities. “By linking carbon credit revenue directly to the farmers adopting regenerative practices, we create economic incentives that align with sustainable land management,” the companies told Foodbytes.



What Innovation Looks like in Traceability

Food Safety



The adoption of digital traceability practices is growing and systems are being integrated to improve data capture and enhance traceability. This digital shift is essential for improving overall food safety and minimizing both the effort and costs of isolating and removing recalled food from the supply chain.

Sustainable Sourcing



Sustainability is a major focus, with companies striving to reduce their carbon footprint. Scope 3 emissions reporting, which covers all indirect emissions in the supply chain, is becoming more common and in certain regions, mandated. Retailers and foodservice providers are leading the way in measuring and reducing these emissions through traceability technologies like RFID, IoT and AI.



Ingredient Authentication



With increasing consumer demand for transparency, verifying the authenticity of ingredients is crucial. Technologies like DNA barcoding and blockchain are being used to ensure that ingredients are genuine and traceable back to their source. Purchasers of certain ingredients with dubious supply chains and/or dwindling availability – like honey, cacao and seafood – can rely on these technologies to ensure collaboration with ethical and authentic suppliers.

Consumer-Facing Technology



Providing consumers with detailed information about the food they purchase is becoming more important. Innovations like QR codes on packaging allow consumers to access comprehensive data about a product's journey, nutritional content and safety status. Both retailers and foodservice providers are embracing digital interfaces to provide consumers optionality and convenience.



Building Sustainable Advantages through Traceability

Investment Landscape

According to Pitchbook data, venture investment into traceability technology overall totaled \$980M in 2023, of which food and ag startups received 20% - a decrease from F&A's 26% share in 2022. However, valuations of traceability-related F&A startups have remained consistent from their funding peak in 2021, bolstered by several large deals into food waste recovery startups, like now-acquired Imperfect Foods. This represents a resilient outlook from investors on these technologies' abilities to provide value to the food system. More recent large deals have focused higher up the value chain, like seafood traceability systems (Captain Fresh) and commodities trading platforms (GrainChain) for farmers.

Rabo Perspective

Global regulations, particularly surrounding carbon and human rights are compelling companies to adopt robust traceability standards to comply with new requirements and maintain market access. **RaboResearch Packaging & Logistics Analyst Xinnan Li** notes that the adoption of traceability practices to date has primarily been a cost reduction and risk mitigation effort, with revenue generation (from a consumer marketing perspective) currently secondary. On the cost and risk mitigation side, traceability enhances control and visibility over supply chain and operational efficiency. When combined with the increasing availability of real-time data collection and analysis, this improves the monitoring, prediction and adjustments of inputs and outputs. This not only delivers cost savings – it plays a crucial role for food safety and carbon measurement, especially in the EU. On the consumer and marketing



side, traceability technologies such as NFC (near field communication) and QR codes allow consumers to interact with products, thereby increasing brand affinity by providing transparency about the product’s origin and journey.

Data analytics and AI are pivotal in predicting and preventing disruptions in the food supply chain, enhancing operational efficiency and influencing decision-making. Li notes an opportunity to partner across other more industrialized sectors to bring existing technology into the food system. For example, as part of Kraft Heinz’s broader digital transformation strategy, they have **partnered** with Microsoft to create a more resilient and efficient supply chain through advanced data analytics and AI - including the development of a “Supply Chain Control Tower” for real-time visibility and automation across Kraft Heinz’s product portfolio. Additionally, the use of digital twins for manufacturing facilities will help predict outcomes and reduce disruptions.

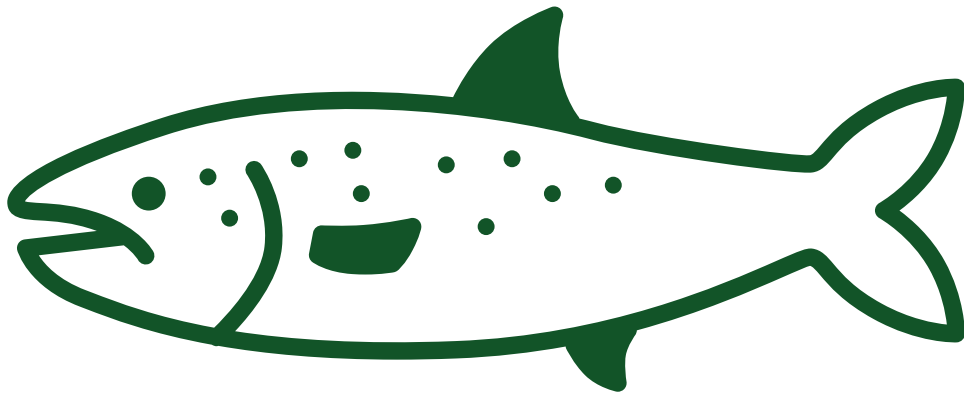
Hub Startups Leading the Charge



Wholechain
Blockchain-based traceability solution designed to work across commodities, allowing businesses to manage risks and increase efficiencies while enabling consumers to make more responsible decisions.



CIED
Blockchain-based farm-to-fork traceability system that can predict the social, environmental, and food safety risks in agri-food supply chains.



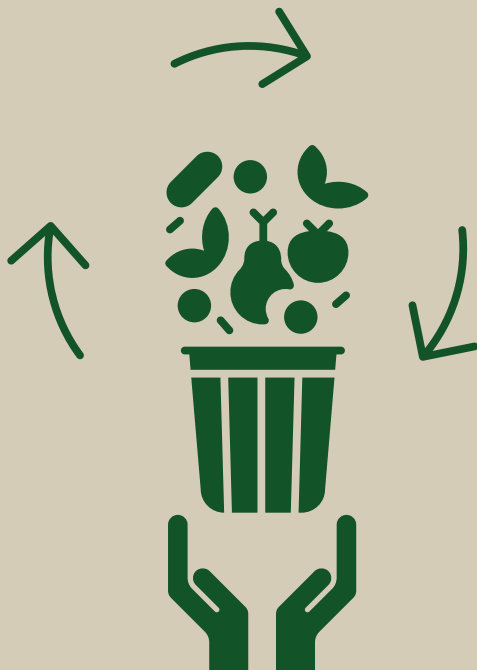
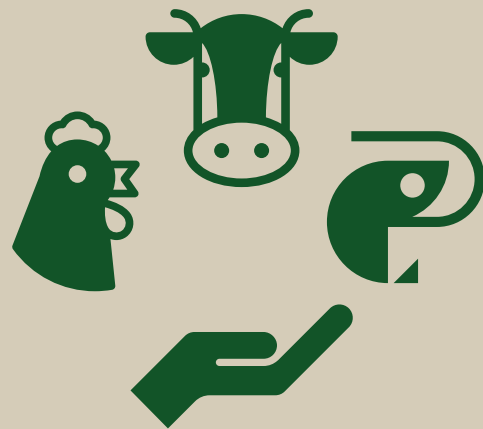
Trending Search Terms in the Hub

Based on overall searches conducted by corporate or investor users in 2024.



Most Popular Traceability Topics Across the Value Chain

Upstream
“animal health”



Midstream
“food waste technology”

Downstream
“dynamic pricing”



Innovation in Action

Lokalist & Rabo Ventures

Rabo Ventures recently invested in Foodbytes hub startup Lokalist, a marketplace and logistics platform that improves access to locally grown and produced food in the Netherlands and makes the Dutch food supply chain more sustainable. Lokalist’s digital platform addresses issues many Dutch retailers and foodservice providers face when seeking out local products that both fulfill customers’ needs and meet sustainability targets. Lokalist’s ability to streamline ordering and distribution maximizes traceability and profitability. By allowing businesses and consumers to source products directly from local producers, Lokalist bypasses intermediary traders, resulting in a short, transparent supply chain. This generates higher profits upstream and responsible sourcing midstream for off-takers seeking sustainable products.

This business model enhances collaboration and benefits the broader farmer community with additional revenue streams. In effect, “farmers are supported with marketing and content to ensure they can share their sustainability endeavors directly with off-takers. This enables sustainable, local producers to reach a broader B2B and B2C client base while maintaining competitive margins,” **Rabo Investments Analyst George Ravestijn** told Foodbytes. The company’s logistics expertise tailors supply chains to product categories and minimizes transport costs, while varied pricing models meet the needs of upstream partners of all sizes.

With Rabo Ventures as an investor, Lokalist will be able to benefit from Rabobank’s strong market position and established network of farmers, retailers and foodservice clients to scale their business. Rabo Ventures shared with Foodbytes that Lokalist plans to add six new hubs across the Netherlands to be able to serve the entire Dutch market in the coming years.



“Lokalist’s short food chain model enhances collaboration and improves farmer margins, benefiting the broader farmer community while providing consumers with locally sourced food.”

– Bar Rubin, Rabo Ventures Associate



Foodbytes Food for Thought

“Lokalist’s ability to minimize transportation costs through product-optimized logistics models supports responsible local food sourcing by maintaining competitive margins for farmers. By providing market access on both the B2B and B2C level, Lokalist offers flexible models of collaboration to provide additional revenue streams for farmers, showcasing a scalable approach to sustainable food distribution.”



Sonia Shekar
Foodbytes AVP
Data Intelligence

“

This collaboration reinforces our commitment to fostering locally relevant solutions while driving a technological revolution in quality control.”

– Wiliam Trujillo, Co-founder and R&D Manager, Warem

Foodbytes Food for Thought

“This partnership exemplifies deep supply chain impact: broader availability of quality transparency helps trace food products throughout the value chain, boosting supply chain efficiency and resiliency while providing consumers with accurate nutritional and composition information. Chemometric Brain’s distinctive spectra library and cloud-based platform enable the technology to adapt and scale, supporting its successful growth.”



Caroline Keeley

Foodbytes Executive Director,
Partnerships

Innovation in Action

Chemometric Brain & Warem

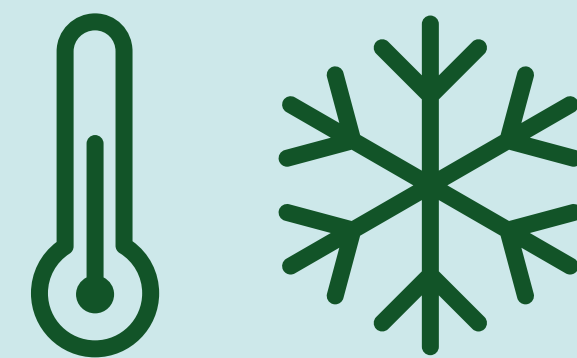
Chemometric Brain (ChB), a Software-as-a-Service quality control solution for the food industry, has recently partnered with Warem, a technological equipment and tailored analytical services provider, to build and implement improved models for food quality control in Latin America. With a library of more than a million NIR spectra (effectively, content fingerprints), ChB’s cloud-based platform is adaptable to any NIRS (near-infrared spectroscopy) hardware. When paired with models to predict chemical composition, check authenticity or evaluate homogeneity, ChB transforms historically costly, slow and unrepresentative quality testing processes. Open to model developers globally in varied niches, ChB allows for applications in specialized sectors with fewer solution offerings than large commodity sectors.

ChB currently offers solutions for the processing – or growing – of a wide range of food ingredients including dairy alternatives, cheese, pork, aquaculture, fruits, vegetables and more. ChB collaborates with model creators like Warem to establish, develop and maintain local application needs and data, effectively making “testing solutions available to many more industry players, leveling the playing field when it comes to quality information and allowing more efficient and rapid decision making,” **ChB VP of Digital Food Quality Jacob Kristensen Illán** shared with Foodbytes. Beyond improving quality control, this partnership will enhance traceability for some of Peru’s key agricultural exports – like avocados, blueberries, grapes, mangos and coffee – while helping local companies optimize production and quality. Together, the companies are “optimizing critical parameters throughout the supply chain, from soil preparation to harvest and export readiness, ensuring superior product quality and minimizing losses,” **Warem Co-founder and R&D Manager Wiliam Trujillo** told Foodbytes. “Our shared vision is to democratize access to these cutting-edge tools, enabling exporters across Peru to elevate their standards,” said Trujillo.



★ Startup Spotlight

Rebound Technologies



Foodbytes hub startup **Rebound Technologies** provides innovative, scalable cooling and thermal energy storage solutions that enhance sustainability and operational efficiency in the cold chain across various segments of the food and beverage industry.

Rebound's adaptable solutions are built on their IcePoint technology platform, which allows them to meet diverse cooling and freezing needs and seamlessly integrate across segments of the food and beverage industry. The company's focus on seamless integration is exemplified by their pilot installation, which they achieved with zero downtime for the facility. Without disrupting operations, the modular and retrofittable systems can be deployed across various facility sizes – from small-scale food processors to large logistics hubs – to work alongside existing cooling infrastructure and leverage thermal energy storage to optimize energy use. Rebound can reduce energy consumption by over 90% while maintaining full cooling capacity. "Unlike traditional systems, which must scale back operations to save energy, IcePoint-enabled technology ensures consistent performance, eliminating the trade-offs between sustainability and operational efficiency," **Rebound Technologies Chief of Staff Brenna Kotar** shared with Foodbytes.

Rebound aims to enhance decarbonization efforts with cost-effective energy storage. By leveraging Rebound, customers can participate more effectively in demand response programs – energy use initiatives that provide financial incentives to reduce energy consumption during peak demand periods – using their facilities as batteries for the grid by providing deployable thermal energy storage on-site. Over a period of 2 to 4 years, this thermal storage generates increased revenue from throughput and enhanced moisture control. Powerful, timely bursts of cooling allow for faster and more efficient freezing processes so partners can process larger volumes or higher-value products without overhauling their operations. Prevention of frost build-up on cooling coils ensures more efficient thermal transfer and reduces energy waste associated with frequent defrost cycles. "By combining these measurable benefits with broader sustainability efforts, Rebound's technology creates a compounding effect – one that allows clients to reduce costs, optimize operations and accelerate progress toward decarbonization," said Kotar.



CONNECT



Rebound's technology fosters stronger collaborations across the supply chain, enabling midstream and downstream partners to meet sustainability goals while boosting profitability and operational efficiency."

– Brenna Kotar, Chief of Staff, Rebound Technologies

Foodbytes Food for Thought

"Adoption of technologies that represent a move away from industry standards can be challenging. Broadening your company's serviceable market and offering deployment options helps earlier-stage companies achieve scale; we've seen startups successfully manage switching costs by using Hardware-as-a-Service models to reach beachhead markets. HaaS can derisk the educational hurdle required for new tech, while easing implementation and delivering stronger results."



Trevor Sieck

Foodbytes Startup
Relationship Manager

“

We enable our partners to succeed through enhancing their ability to serve their customers, allowing Starfish to deliver value to the whole ecosystem without disrupting companies' current operations.”

– Wiggs Civitillo, Founder & CEO, Starfish

Foodbytes Food for Thought

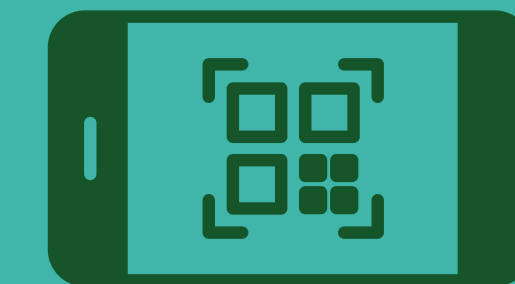
“For an industry characterized by fragmented supply chains, a universal foundation for data exchange – adaptable to legacy platforms – will be essential for building a full picture of food traceability, which is increasingly important on two fronts. One is the proactive management of risks and operational efficiencies. The other is from an ESG perspective, where global supply chains are progressively converging and the regulatory landscape is pushing businesses to view full chain traceability as no longer an aspiration, but an assumption for doing business.”



Sonia Shekar

Foodbytes AVP
Data Intelligence

★ Startup Spotlight Starfish



Foodbytes hub startup Starfish provides traceability solutions that ensure quality, compliance and sustainability across global supply chains to enhance food safety, reduce food waste and build consumer trust. As a neutral connectivity layer, “Starfish addresses a critical gap in the food industry by enabling seamless data sharing across solution providers, making it easier than ever for food companies to exchange traceability data,” **Starfish Founder and CEO Wiggs Civitillo** shared with Foodbytes.

Starfish integrates with partners throughout the food and ag supply chain by connecting directly to existing systems and transforming disparate data formats into the GS1 protocol for standardized data exchange. This integration ensures interoperability, facilitates compliance with FSMA 204 regulations and enables the collection of sustainability data, enhancing end-to-end transparency and collaboration. Civitillo asserted, “This creates new value by enabling faster recalls, improving operational transparency and allowing businesses to communicate the safety and sustainability of their products directly to consumers, fostering trust and loyalty.”

By connecting systems across producers, distributors and retailers, Starfish can accurately track perishable goods and partner with collaborators working in food waste prevention or food redistribution. Midstream, Starfish simplifies adherence to import and export regulations, creates efficiencies and reduces delays globally. The platform can work with logistics and operational partners to provide real-time product movement data, helping those optimizing transport and storage to minimize energy use and carbon emissions. To meet downstream needs, the platform enables sharing sustainability certifications and sourcing claims, which helps partners verify and communicate responsible practices to consumers. The company’s current partnerships include solution providers ranging from traceability technology providers, solution implementors, IoT and Device companies and key industry associations. Manna Fish Farms CEO Donna Lanzetta praised Starfish for its secure and intuitive data-sharing solution: “It safeguards intellectual property while streamlining the complex task of tracking every unit my customers process.”



CONNECT

What Innovation Looks Like in Personalized Nutrition

Nutrigenomics

Going a step deeper into ‘food as medicine,’ consumers are increasingly curious about nutrigenomics: how their own genes and nutrition interact. The rise of semaglutides originally used for diabetes management, like Ozempic and Wegovy, are now being explored for weight loss and metabolic health. These supplements are gaining attention for their potential to help individuals manage weight more effectively by influencing appetite and insulin sensitivity – with evolving implications for food producers and manufacturers. Per **RaboResearch Consumer Foods Sr. Analyst Julia Buech**, “increasingly, we will see technological solutions that combine food science and molecular biology with AI to optimize ingredient formulations and speed up processes while managing costs.”



Global Flavors and Ingredients

Demographic shifts, particularly in the US, have led to a growing emphasis on incorporating culturally relevant flavors – including Latin and Asian influences – into food manufacturer portfolios. In terms of personalized nutrition, global flavors ensure that dietary recommendations are not only healthy but also enjoyable and culturally appropriate, which can improve adherence and satisfaction.

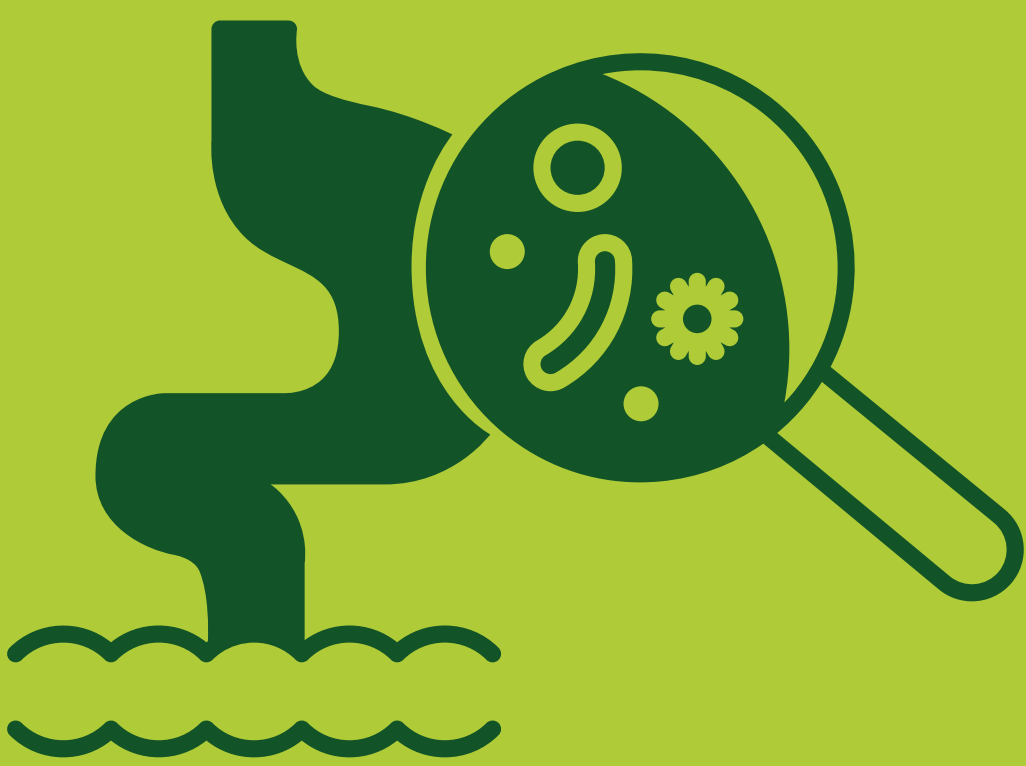


Alternative Sugar

With increasing awareness of the health risks associated with high sugar consumption, alternative sugars like stevia, monk fruit and allulose continue to grow in popularity. These alternatives provide sweetness without the negative health and insulin level impacts of traditional sugars, making them a key focus in personalized nutrition offerings.

Gut Health

The gut microbiome plays a key role in overall health, influencing everything from digestion to immune function. Personalized nutrition plans often include probiotics, prebiotics and dietary adjustments to support a healthy gut microbiome, tailored to an individual’s specific needs.



Building Sustainable Advantages through Personalized Nutrition

Investment Landscape

Venture investment into the nutritional supplement and personalized nutrition space has followed the same trend as the overall VC market, showing a peak in 2021 at \$1.4B and slowing to just over \$700M in 2023, according to Pitchbook data. However, median deal sizes grew over 50% and valuations grew over 60% during the same period. As investors and consumers alike have become more discerning about functional claims on food, the companies capable of providing more product validation and clinical evidence seem to be securing funding at higher valuations than other startups that raised money during the 2021 peak – a good sign of more mature companies in the space achieving real results.

Rabo Perspective

Personalized nutrition tailors dietary recommendations to an individual's unique genetic, metabolic and lifestyle factors, aiming to optimize health outcomes. Large food companies like Nestlé and Danone have been building out their nutritional therapy and medical foods businesses for years, and with the recent [acquisition](#) of Hormel Health Labs, Lyons Magnus aims to position itself as another leader in the specialized nutrition space. Personal nutrition promises improvements in metabolic health, such as enhancing glucose and insulin sensitivity, improving lipid profiles and reducing inflammation. These plans can be effective in managing blood sugar responses, which has been top-of-mind among a growing number of consumers adopting anti-obesity medications like Ozempic and Wegovy, the latter of which is also now being prescribed in the US to protect heart health, converting a wider



swath of consumers to semaglutide use.

An increased interest in personal nutrition has also put ultra-processed foods (UPFs) under the microscope as a potential link to over 30 poor health outcomes, such as obesity, cardiovascular disease, various cancers and gastrointestinal health issues. **RaboResearch**

Food & Consumer Trends Executive Director

Nick Fereday notes in his latest [report](#) that UPFs not only lack micronutrients, but they also contain “non-nutritive ingredients and additives, such as emulsifiers, potentially causing further impact to the microbiome.”

However, the affordability and convenience of UPFs makes it challenging for consumers to shift away from them, thus making it challenging for companies to justify investing in alternatives. Opportunities to capture increased consumer interest and demand include reintroducing fiber as a natural weight loss treatment, [reformulating](#) with AI to optimize personal health outcomes and repackaging or developing products that target emerging eating occasions (such as mini-meals for reduced appetites). Additionally, Fereday notes, “one interesting new theme has been the emergence of [research](#) on sustainability, suggesting that a reduction in the consumption of UPFs is linked to lower energy use and greenhouse gas emissions.”

Hub Startups Leading the Charge



Lil Mixins

Infant through toddler supplement program clinically proven to prevent eczema, food allergy, asthma and rhinitis.



Nulixir

Ingredient encapsulation technology improving taste, shelf-life, bioavailability and potency of nutrients in food, beverage and dietary supplement products.



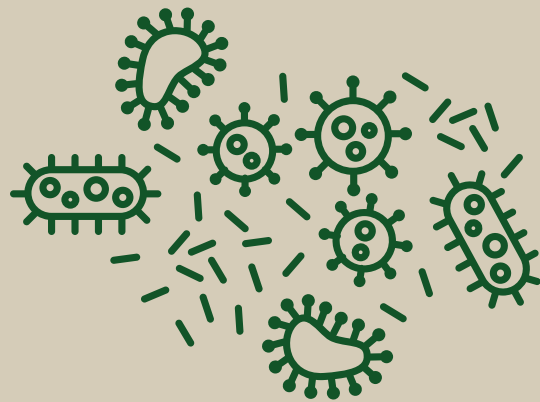
Trending Search Terms in the Hub

Based on overall write-in searches within food ingredients conducted by corporate or investor users in 2024.



#1

immune health



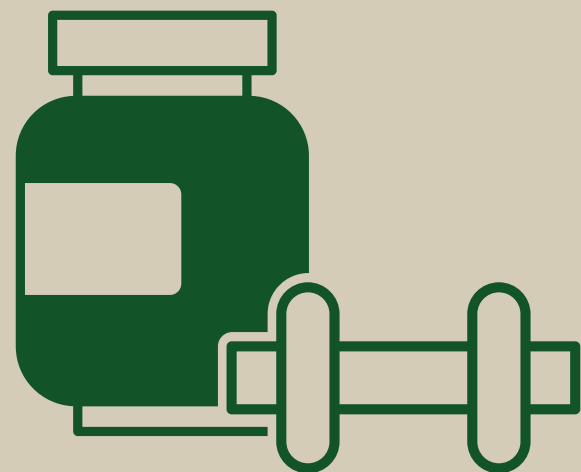
#2

sodium reduction



#3

sport nutrition



“

We are proud of our ingredients, so we put them on the front of the package – hopefully saving consumers time and giving them peace of mind.”

– Trish Thomas, Co-founder & CEO, Every Body Eat

Foodbytes Food for Thought

“Personalized nutrition has been on the rise for the past few years and food corporates are responding to evolving customer demand with smaller formats, cleaner labels and lower sugar claims. Recently, we note a trend towards industry consolidation with large corporates acquiring ‘better-for-you’ brands catering to the market demand for higher quality and global flavors such as PepsiCo’s recent acquisition of Siete Foods.”



Caroline Keeley

Foodbytes Executive Director,
Partnerships

★ Startup Spotlight Every Body Eat

Foodbytes alum Every Body Eat makes snack foods with a mission captured in its own brand name: to be enjoyed by everyone, together – regardless of dietary restrictions and food sensitivities. Free from the top 14 food allergens, gluten, corn, and seed oils, and produced with clean, whole ingredients, Every Body Eat upholds the consumer trust it has built across its relatively short supply chain.

To maintain the integrity of their food safety upstream and midstream, all of Every Body Eat’s ingredient and supply chain partners must be certified Non-GMO, Gluten-Free and Kosher – and their olive oil is tested to guarantee no risk of seed oils. The brand is the first to receive No Seed Oil certification for crackers and cookies, a differentiator for exacting snack aisle shoppers in stores like Whole Foods. In addition to harmful health effects, seed oils also carry significant environmental impacts, including high GHG emissions from cropland use, biodiversity loss, water use and subsequent impacts from high levels of processing.

“Not all foods produced in facilities that pose risks of cross-contact with other ingredients or food allergens actually label that risk,” **Every Body Eat Co-founder and CEO Trish Thomas** shared with Foodbytes. To mitigate this and lead with transparency, Every Body Eat’s snacks skip the co-manufacturers and are uniquely produced in their own facility. “Removing corn in all its forms – natural flavors, maltodextrin – is very important for consumers with medically-mandated dietary restrictions, like autoimmune diseases, as well as dietary preferences like Whole30 or Paleo protocols,” emphasized Thomas, portraying the company’s commitment to meeting the needs of increasingly health-conscious consumers who embrace personalized nutrition, beyond allergens alone.



CONNECT

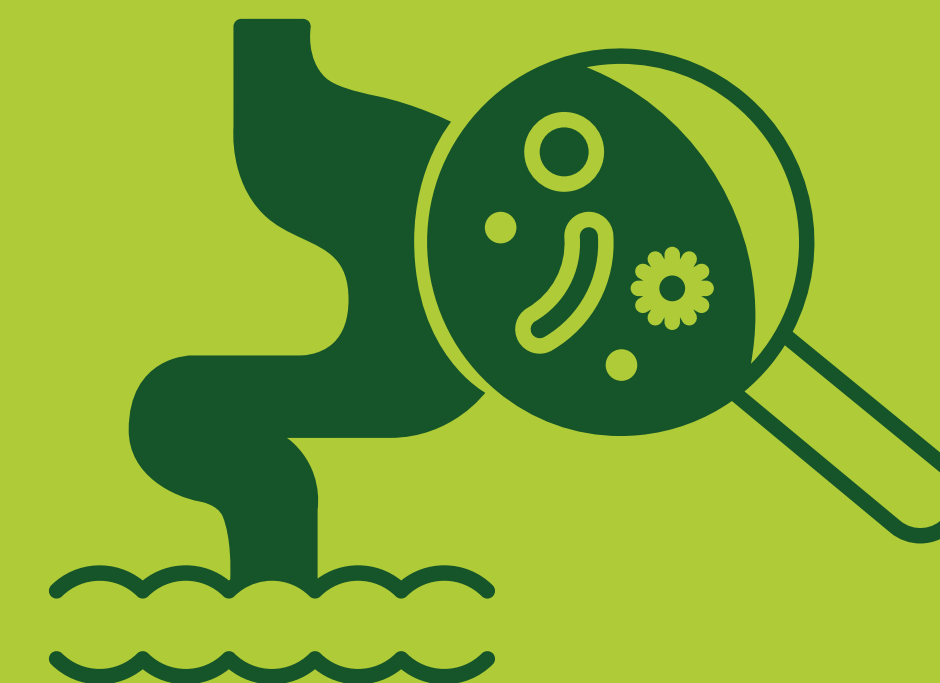


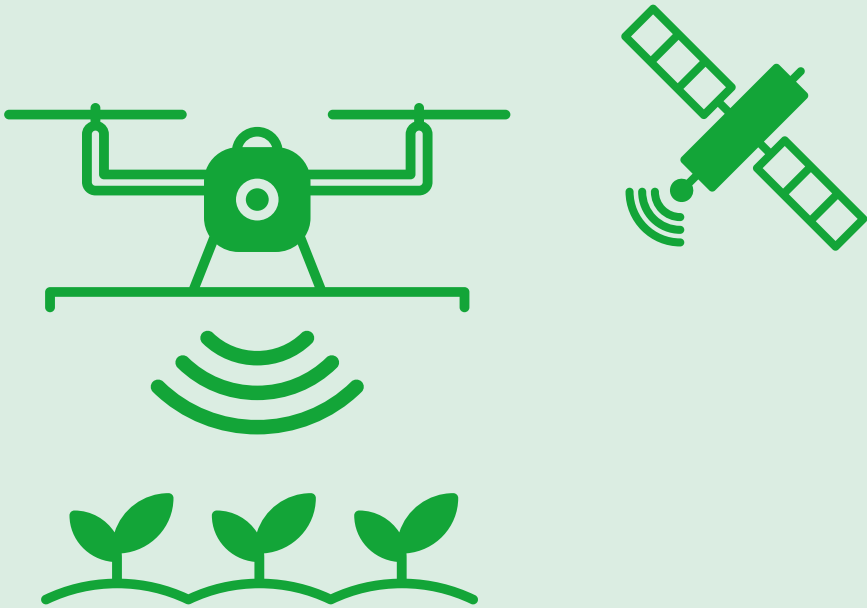
Photo: Every Body Eat

2024 EOY Market Map Appendix

 Click on the startups here to visit their Foodbytes profiles and kickstart connection.

Carbon MRV

- Adapta
- Adtingo Agritech
- Aligma Group
- American Prime
- Carbon Asset Solutions
- Convergent Bio
- Downland
- Drone Design Lab
- Hi Cell Crop Sciences
- mOOvement
- MyEasyFarm
- Open Forest Protocol
- Planting Profits LLC
- Space4Good
- SugaROx
- Tierra Foods



Traceability

- Cropify
- Enismaro
- Farmit Agroecology Nigeria Ltd
- iFoodDS
- Index Bio Inc.
- inPhocal
- InsectSense
- Kemiex
- Legit Fish Inc.
- OlaClick Inc.
- Osense
- PlastX
- Seafood AI
- Table2Farms
- TAGim
- TheoryMesh
- Veros



Personalized Nutrition

- Athletics Fit LLC
- Bluetree Technologies
- Cellva Ingredients
- EATO
- Five Food S.A.S.
- Hydrosome Labs
- Ladle
- Marvofoods
- Nature’s Principles
- Nutribud Foods
- Optishake Oy
- Pastamalfi
- Sierra Agra USA
- Smartypans Inc.
- The Crop Project
- Thoughtful Food Pte Ltd
- WPS



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- Brand exposure opportunities

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- Facilitated introductions to in-scope startups
- Personalized data-driven insights
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