



Wells Fargo Innovation Incubator (IN²) Webinar Series

June 23, 2020



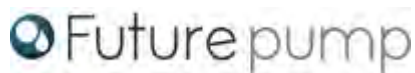
Electrification: Innovators and ecosystem



Ztractor (US) – Developer and manufacturer of multi-purpose autonomous electric tractor capable of using different farming attachments.



Rootwave (UK) – Electrifying weeds to offer high precision weeding services. Partnered with Small Robot Company to integrate their device onto an autonomous robot.



Futurepump (KE) – Solar powered irrigation pumps designed for 1-2-acre farms. Looking for distribution partners to expand deployment and harvest more data remotely to build service layers.



SunCulture

SunCulture (KE) – Developer of RainMaker, a solar powered drip irrigation system for off-grid applications. Funding from EDF in 2018 to support expansion and set up financing solutions.

Investors



Ecosystem



Description

- Fermentation of protein products for human, aquaculture, and livestock consumption

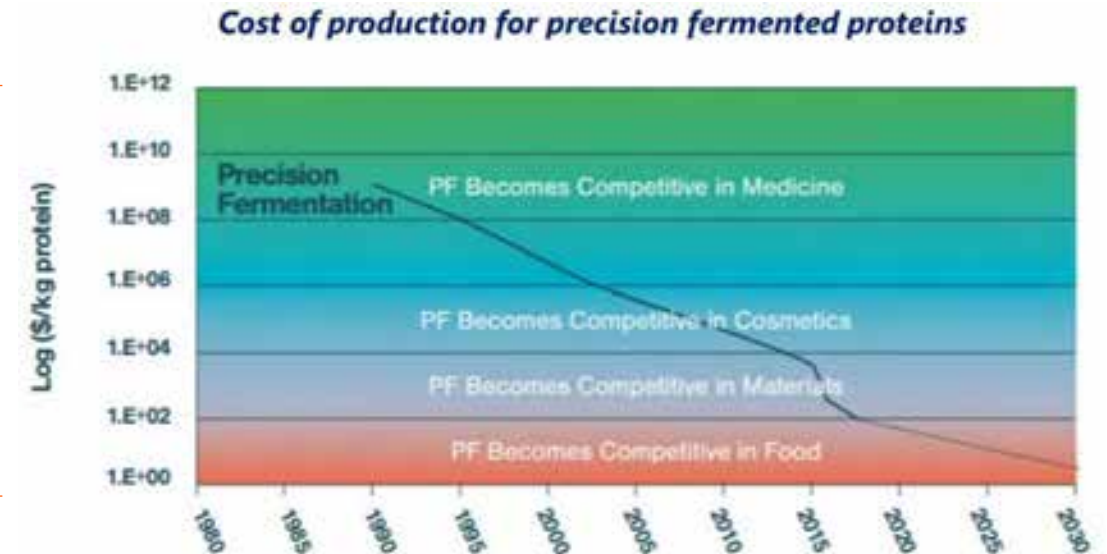
Trends

- Increasing use of precision fermentation and cultivation techniques
- Focus on the aquaculture industry
- Expanding source materials for protein products

Opportunity for innovation

- Precision protein manufacturing capabilities
- New ingredients and flavors
- Distributed manufacture business models

Alternative Proteins



Source: RethinkX

Alternative Proteins: Innovators and ecosystem



Shiok Meats (SG) – Cultivated proteins for human consumption grown in a bioreactor. Alumnus of Y Combinator accelerator program, targeting high value crab and lobster replacements for Asia markets.



Nature's Fynd (US) – Alternative proteins for human consumption grown from extremophiles extracted from geothermal vents.

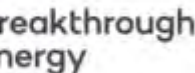


Novonutrients (US) – Technology to transform CO2 to agri-food proteins. Development project with Chevron for a pilot plant and grants from US Department of energy to develop carbon sequestration. Targeting aquaculture feed market first.



AgriProtein (SA) - Developer of alternative protein feed products from organic waste ingested by insects. Partnership with Christof Industries in 2017 to scale globally. Targeting aquaculture feed first.

Investors



Ecosystem



Description

- Optimizing livestock farming processes
- Methane emission reducing feed additives
- Waste treatment and anaerobic digestion

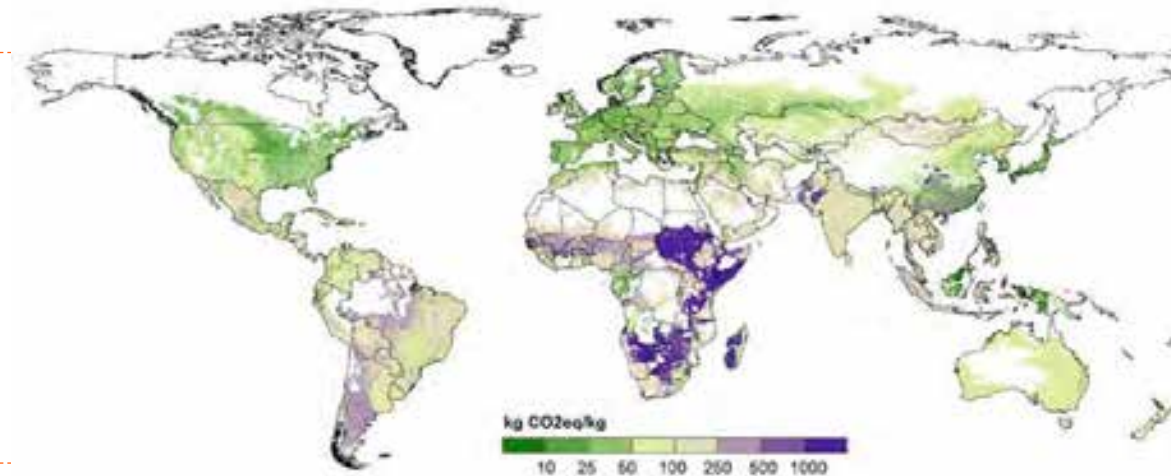
Trends

- Regulation driving better on-farm practices
- Increasing productivity through digitization
- Consumer-led pressure on emissions intensity
- Cost of waste disposal increasing

Opportunity for innovation

- Enteric fermentation reducing feed additives
- On-site waste treatment
- Farm management platforms, sensors, and analytics

Livestock Decarbonization



Source: Herrero, 2013



AgBoost (US) – Genetic insights and herd management software for livestock. Optimized breeding increases productivity, partnered with largest genetic testing lab in US to deliver results online.



Bluetector (CH) – Livestock manure physical and biological treatment that does not require chemical additives. On-site containerized solution to reduce manure transportation costs to farmer.



Mootral (UK) – Methane emission reduction feed additive. Using natural ingredients means it is added to regulatory feed lists more easily and simple to manufacture. Proving product on pilot ranches in EU.



Cainthus (US) – In-shed machine vision technology to track livestock health and optimize productivity while increasing transparency in the supply chain. Pilot and investment from Cargill in 2018 is on-going.

Investors



Ecosystem



Sustainable Agriculture



Overview

 Business Activity

Circular Economy

Decarbonization & Electrification

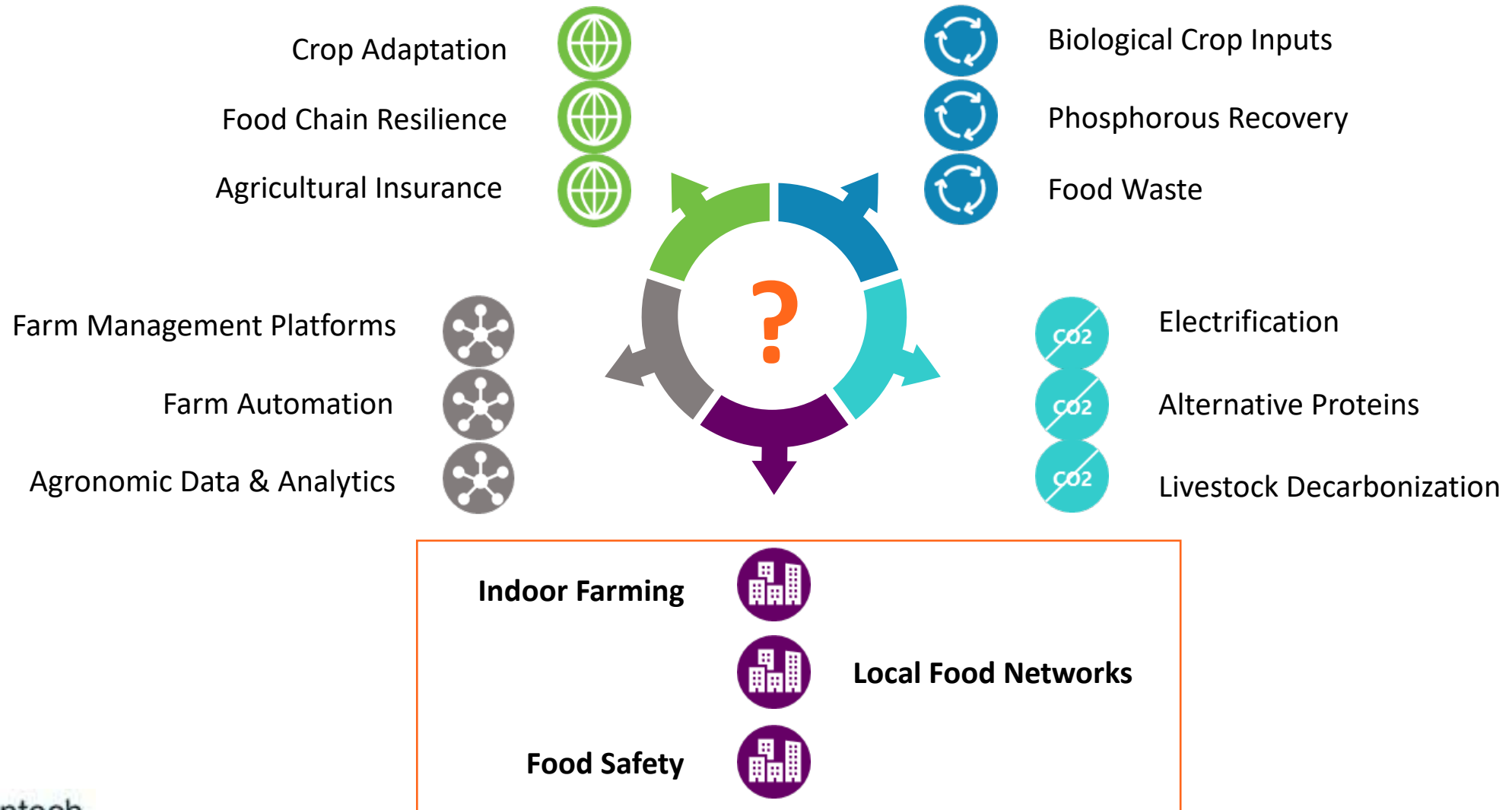
Cities & Urbanization

Digitalization, Decentralization, Automation

Resilience

Sustainable Agriculture

Business activities for deep dives





Description

- Vertical farming in indoor sunless environments
- Greenhouse-based farms
- In-store and at-home farms

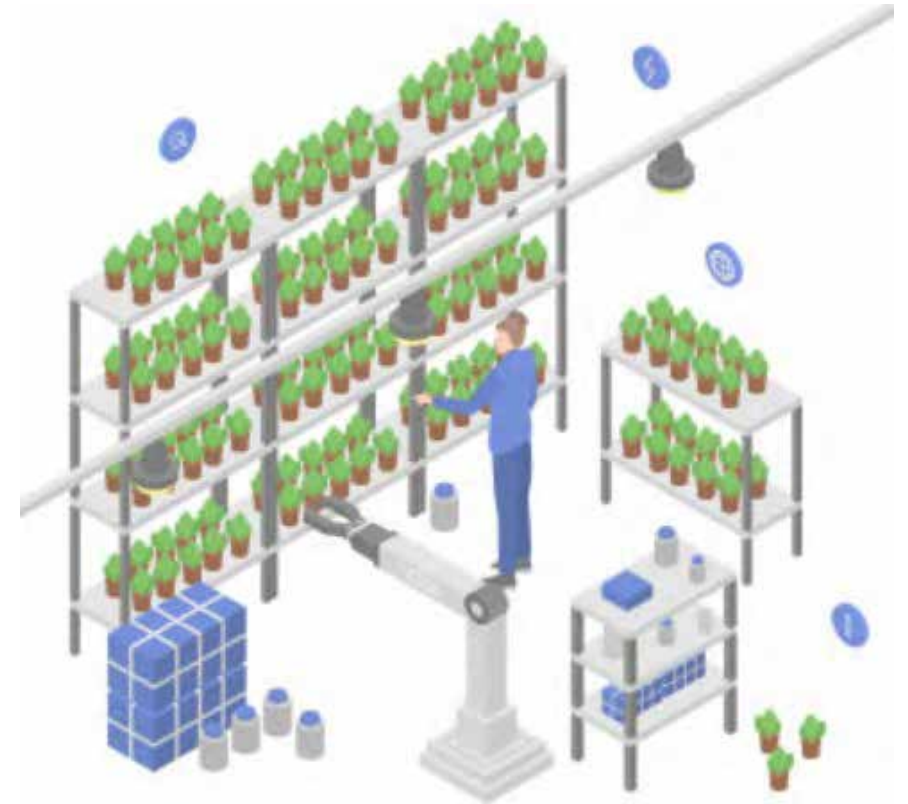
Trends

- Increasing automation of indoor farming
- Food security driving demand for controlled environment agriculture
- Decreasing cost of technology is lowering barrier to entry

Opportunity for innovation

- Business model innovation to drive expansion
- Highly automated growing facilities
- Seeds designed for indoor growing

Indoor Farming



Source: Freepik



AeroFarms (US) – Highly automated indoor aeroponics developer. Three farms throughout the US with an R&D center planned in United Arab Emirates to combat food insecurity.



Freight Farms (US) – Container farms with high level of automation and support software for growers. Recent partnership with Sodexo gives strong sales channel.



Jones Food Company (UK) – Developer of a 'medical grade' automated indoor farming system. Working to integrate into Ocado's supply chain in the UK.



Gronska Stadsodling (SE) – Engineer-led team with vertical farm producing strawberries. Integrated delivery operations to local retailers.

Investors



Ecosystem



Local Food Networks



Description

- Direct-to-consumer food delivery models
- Optimization of local food networks
- Food recovery solutions

Trends

- Disintermediation of the supply chain
- Consumers increasingly locavores
- Supply chain is becoming a demand chain

Opportunity for innovation

- Micro-fulfilment technology
- Pricing and logistics optimization
- Online ‘farmer’s market’ experience

Local Food Networks

A map of fresh produce logistics routes in the US



Source: Environmental Research Letters



GrubMarket (US) – Online farmer’s market experience connecting consumers with locally grown produce. Strong distribution tech. innovation enables competitive pricing and fast delivery. Acquiring a network of local distribution hubs to expand.



Olio (UK) – Developer of an app allowing users to share surplus food items with neighbors and local stores. Network of engaged local food-interested users gives strong potential for advertising revenue.

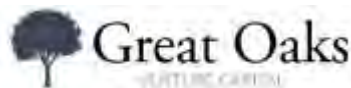


Imperfect Foods (US) – Excess and ugly produce D2C delivery, expanded into kitchen cupboard supplies to improve economics of low value fresh produce delivery. Owns its delivery network. Strong expansion to 30+ cities.



Takeoff (US) – Micro-fulfillment technology to enable grocery stores to bolt-on delivery services and fulfillment of online orders. Enables local grocery networks to compete with centralized online delivery.

Investors



Ecosystem





Description

- Pathogen testing
- Inspection & compliance
- Quality control

Trends

- Lowering cost of DNA tests enables onsite testing
- Traceability increasingly valuable due to consumer demand, regulatory pressure and costs of recalls

Opportunity for innovation

- Faster testing and results processing
- Hyper-spectral inspection cameras
- Real-time quality inspection and compliance

Food Safety



Source: World Health Organization



ImpactVision (US) – Hyper-spectral imaging camera to reduce food loss and detect foreign object contamination. Alumnus of Maersk's food track incubator.



Clear Labs (US) – Rapid DNA testing using Next Generation Sequencing tech. for food analysis and indexing. 24-hour test turnaround using on-site system. Recent funds to support Covid-19 detection.



SafeTraces (US) – On-food tracing solution. Using a genetic identifier that can survive washing stages allows for whole supply chain tracking. Expanding into textile and other industries.



SomaDetect (CAN) – In-line milk sensor that connects dairy farmers with the milk-quality indicators relevant for the management of their production. Real-time data to farmers. Working with industry associations as channel partners.

Investors



SUSTAINABLE DEVELOPMENT
TECHNOLOGY CANADA
TECHNOLOGIES DU DÉVELOPPEMENT
DURABLE CANADA



khosla ventures

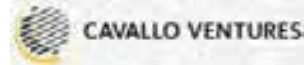
BUNGE



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MENLO VENTURES
Big Ideas. Realized.



Ecosystem



Sustainable Agriculture



Overview

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Circular Economy

Decarbonization & Electrification

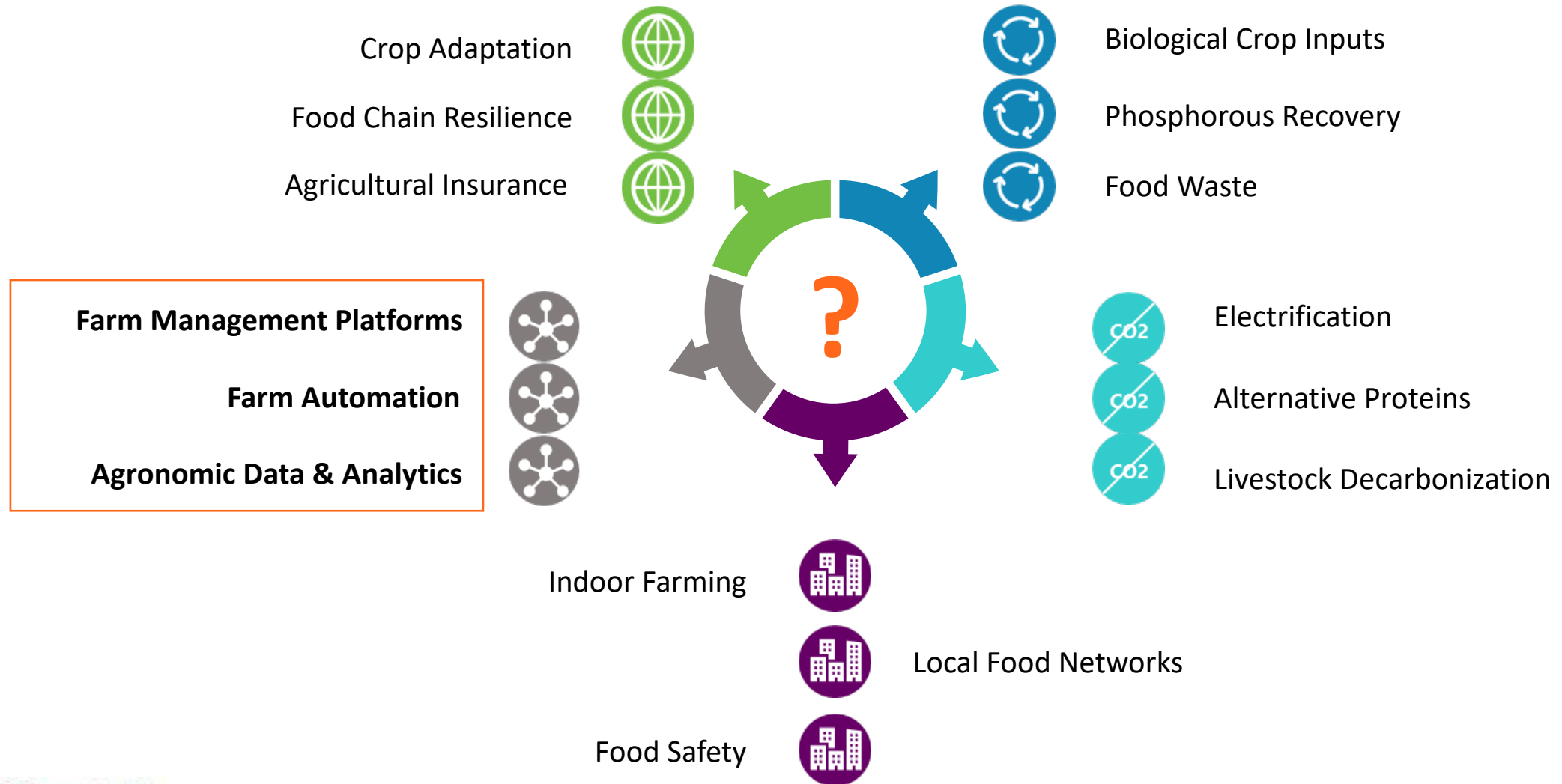
Cities & Urbanization

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Resilience

Sustainable Agriculture

Business activities for deep dives



Farm Management Platforms



Description

- Optimizing farm tasks
- Actionable insights from farm monitoring and data
- Access to commodity markets

Trends

- Market consolidation into single-entry management platforms
- Integration of satellite and on-ground measurement data
- Market fragmentation

Opportunity for innovation

- Specialization by value chain activity
- Aggregated platforms and access to competitive commodity markets
- Task and operations automation



Source: Predictive Analytics Today

Farm Management Platforms: Innovators and ecosystem



Conservis (US) – Farm management platform focused on row crops and permanent crops. Partnered with Rabo AgriFinance to provide financial performance metrics.



Agrivi (UK) – Farm management platform focused on broad range of agricultural value chain including coops and enterprise farm management.



AgriWebb (AUS) - Technology to solve management problems and trading inefficiencies for the livestock production industry. Acquired UK based FarmWizard in 2018 to expand to Europe and increase services for livestock industry.



FarmLogs (US) – Planning, management, monitoring and marketing software for all arable farm types. Raised \$22 million in 2017 to grow team and accelerate product innovation.

Investors



ANDREESSEN
HOROWITZ



WHEATSHEAF



Rabo AgriFinance



MIDDLELAND CAPITAL



Trimble



DeLaval



Ecosystem





Description

- Automation of crop production cycle
- Robotic farm machinery

Trends

- Automation accelerated by farm labor crisis and global health crisis
- Key enabling tech. for indoor farming systems
- Robotics-as-a-service business models

Opportunity for innovation

- Increasing range of tasks performed
- Increasing range of applicable farm type
- Specialization in high-value crops

Farm Automation



Source: Agrobot

Farm Automation: Innovators and ecosystem



Small Robot Company (UK) – Three robots in development for in-field arable row crop operations. Provider of crop mapping services whilst in application development to introduce weed zapping tech. from Rootwave as a service to farmers.



MetoMotion (IL) – Developer of a harvesting robot using machine vision and robotics for the greenhouse market -1.15 million acres of globally.



Earthsense (US) - Robotics and machine-learning platform to help crop-breeders to accelerate crop improvement, to help farmers improve profitability through under-canopy field data, and to solve emerging threats to productivity. Partner to launch of Microsoft FarmBeats platform.



Iron Ox (US) – Modular robotic farming solutions targeting indoor farming market. Creating clean growing environment to reduce contamination risk and high level of automation to improve efficiency.

Investors



Ecosystem





Description

- Sensors and software to record and store data
- AI and machine learning techniques to optimize data driven decision making

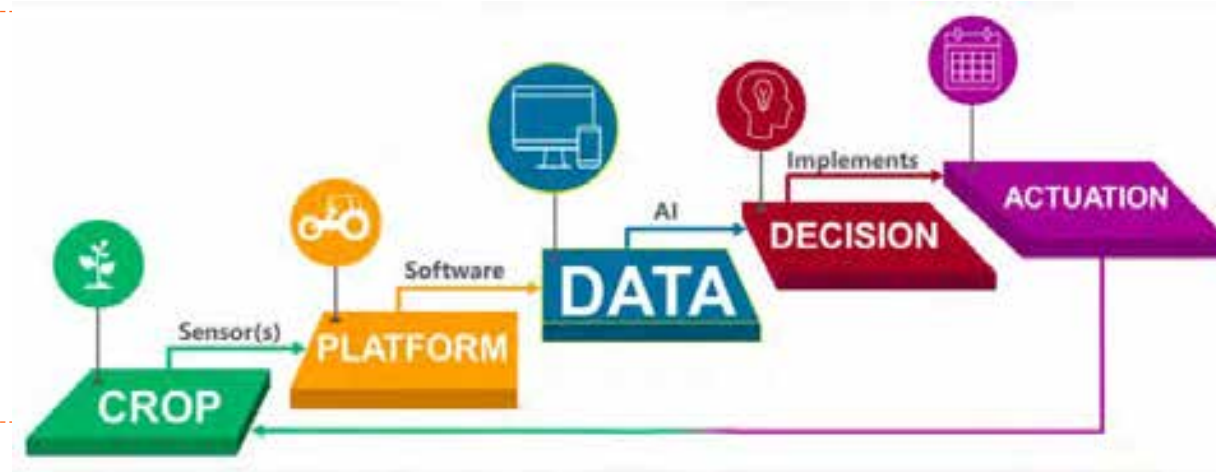
Trends

- Increasingly farmer-centric offerings
- More complex data streams and sensors
- Low cost data analytics to drive intelligent services marketplaces

Opportunity for innovation

- Ground-to-air data correlation and corroboration
- Automated soil sampling
- Aggregated service offering

Agronomic Data & Analytics



Source: MDPI

Agronomic Data & Analytics: Innovators and ecosystem



Granular (US) – Business software and analysis platform for growers. Acquired by DuPont in 2017 for \$300 million. Partnered with Planet and Mavrx for aerial imagery, and Nori to develop carbon sequestration measurement.



Arable (US) – Software and sensor offering to delivery actionable insight from the field and manage weather risk and crop health. Strong incumbent partnerships to deliver decision support across farming practices.



Aker (US) – Crop diagnostic and agronomy tool. Free to use app delivers real-time crop damage insights to measure and fix residue, drainage, spray drift, compaction, foliar micronutrients, off-season management and other on-farm decisions.



Rezatec (UK) - Provider of earth information products, earth analytics services, and products for consolidated global satellite imagery.

Investors



Ecosystem



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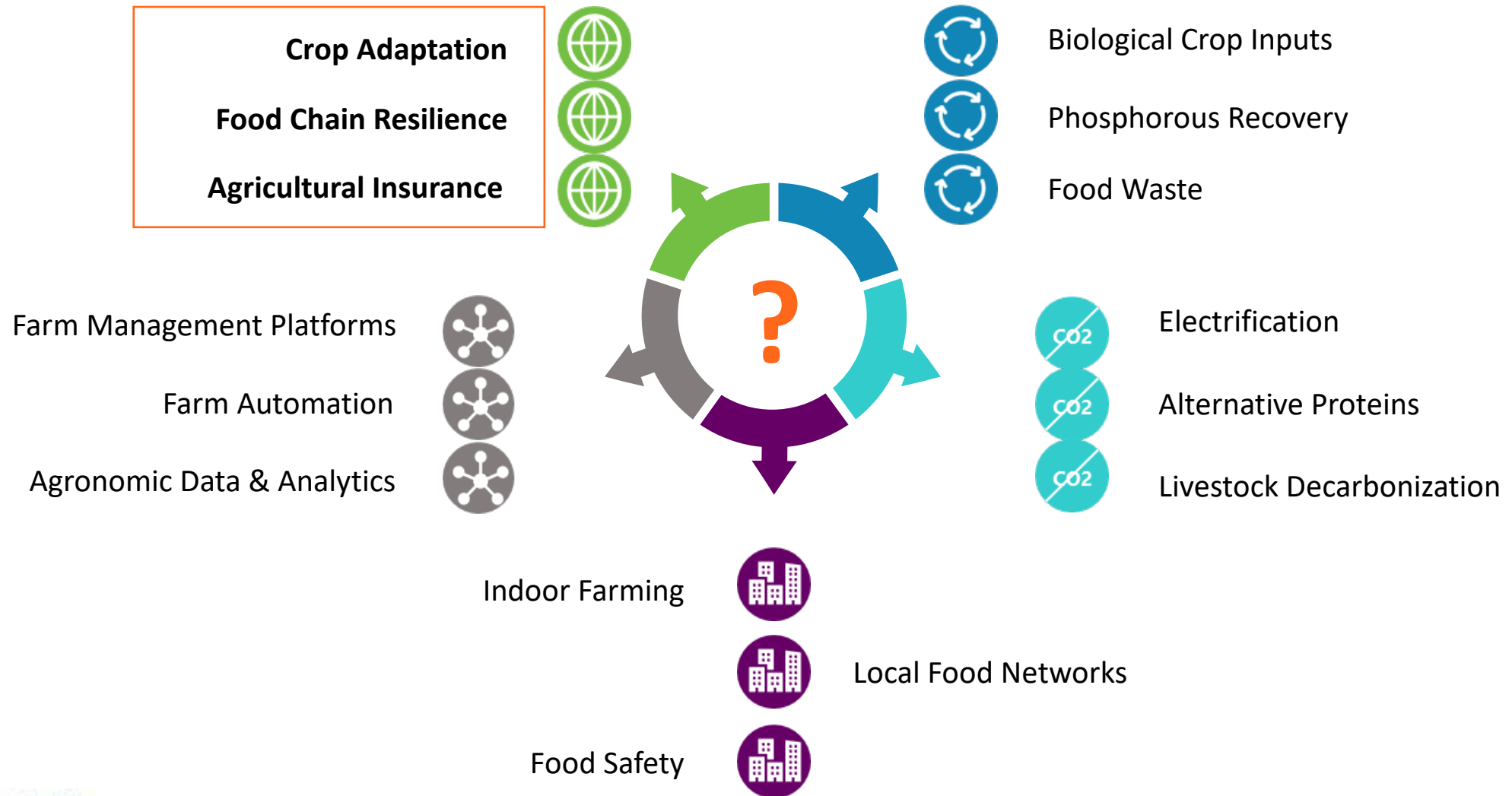
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Crop Adaptation

Description

- Breeding desirable traits of crops to increase resistance to biotic and abiotic stress
- Microbial seed treatments
- Mixed crop and mixed crop-livestock systems

Trends

- Increasing accuracy of genetic engineering techniques
- Decreasing cost of genetic engineering
- Reducing consumer opposition to GM foods

Opportunity for innovation

- High throughput trait discovery (microbes and plants)
- Engineered seeds and cover crops
- Regenerative agriculture

Crop Adaptation

At high emissions levels,
12-39% OF THE EARTH'S LAND SURFACE
will develop novel climates.



Source: CGIAR

Crop Adaptation: Innovators and ecosystem



Tropic Biosciences (UK) – Genetic engineering of tropical specialty crops. Focusing on crops that are critical to fragile food chains and grown in increasingly variable tropic climates. \$28.5 million Series B to commercialize genetic engineering platform 'GEiGS'.



Indigo (US) – Provider of multiple farm services, core technology is a biological seed microbiome treatment. Addition of a full stack of agronomic and trading services looks to compete with incumbent global agricultural suppliers.



CoverCress (US) - Developer of winter oilseed cash crop developed using CRISPR and based on native pennycress. Encourages soil protection through winter with a cash generating product. Monsanto Growth Ventures an early investor.



Terviva (US) – Turns distressed agricultural lands into productive sources of protein and renewable bioenergy by planting pongamia. Encourages soil remediation and crop diversification while delivering valuable by-products.

Investors



Ecosystem





Description

- Logistics optimization
- Cold chain logistics improvements
- Supply chain tracking sensors & software

Trends

- Optimizing logistics to reduce transit time
- Improved communications to increase agility
- Reducing cost of cold chain logistics
- Waste and security concern driving innovation

Opportunity for innovation

- Demand Prediction
- Cold chain innovations
- Digitizing and connecting supply chain actors

Food Chain Resilience



Source: International Life Sciences Institute

Food Chain Resilience: Innovators and ecosystem



Shippeo (FR) - AI-based platform for predictive and real-time visibility into goods delivery. The company is industry agnostic, but with growing grocery delivery sector the \$21 million Series B in February has increased their focus.



FoodLogiq (US) – Agriculture and food logistics and tracking software for the food industry. One portal for combining suppliers, compliance, quality and other supply chain operators to increase efficiency.



Vericool (US) – Sustainable cold chain packaging solutions. Food companies Square Baby, Butcher Box, and other temp. sensitive CPG companies are using the solution. \$19.1 million Series B investment from Radicle and others to reduce product costs.



AI Palette (SG) - Machine learning and AI processes to predict food trends. Contracts with several Fortune 500 food companies to fast track product development and optimize production volume.

Investors



capital



Ecosystem





Description

- Providing insurance against increasingly volatile climate
- Insurance for smallholder farmers

Trends

- Increasing connectivity of farmers enables agricultural insurance
- Increasing accuracy and granularity of weather data enables more efficient crop insurance

Opportunity for innovation

- Satellite data integration with ground data
- Digital delivery of crop insurance and other services

Agricultural Insurance



Source: Technavio

Agricultural Insurance: Innovators and ecosystem



Understory (US) - Weather-based analytics for agriculture, utilities and insurance markets. The company's storm sensors enables instant insurance payouts. Recent pivot to hail protection for the auto industry.



MeteoProtect (FR) - Parametric insurance solutions which protect from financial losses caused by unfavorable weather conditions. The company was acquired by Cooper Gay in April 2020.



Farmers Business Networks (US) – Farm data network using anonymized data to drive optimal farming decisions. Accuracy of that network's data enables accurate insurance pricing.



Pula (CH) - Provider of data-driven agricultural insurance for 1.5 billion un-banked and uninsured smallholder farmers globally. Winner of Insuretech 3.0 Challenge 2019.

Investors



Ecosystem



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Cleantech Group's research, consulting and events catalyze opportunities for sustainable growth powered by innovation.