



FINISTERE
VENTURES, LLC

2019 AgriFood Tech Investment Review

Data provided by

 PitchBook

Introduction

Since Finistere Ventures was co-founded by Dr. Jerry Caulder in 2006, there has been an incredible rise of investment into the agtech sector and, more recently, into the foodtech sector. Jerry was a leader and pioneer in biotech and agriculture who dedicated his life to agricultural innovation. As the CEO of Mycogen (sold in 1998 for more than \$1 billion to Dow Chemical, the precursor to Corteva), Jerry helped create the agtech industry we see today. While exit potential has yet to truly materialize, there is no doubt that we are seeing a boom in investment and talent powering an unprecedented pipeline of companies in agriculture and food. Jerry was delighted to witness the beginnings of this occurrence in our sector. Although we lost Jerry earlier this year to his ongoing battle with cancer, we have no doubt that he would have loved to witness the continued growth and development of our industry. As we publish the 4th annual edition of the Finistere PitchBook AgriFood Tech Investment Review, we dedicate this edition to our dear mentor Jerry D. Caulder, PhD, and his lifelong passion for agriculture.

This year, the teams at Finistere and PitchBook are taking the opportunity to reflect on how 2019's investment metrics tie into a deeper trend of transformation and disruption being driven through agriculture and food. We are also taking the opportunity to introduce an expanded taxonomy that includes the foodtech space. This taxonomy, developed by Finistere Ventures, parallels and complements the existing dataset for agtech. When we started this partnership in 2017, our goal was to provide the broader agrifood tech ecosystem with consistent and comprehensive VC investment information. At that time, this information was not readily available because the definitions and inclusions for sectors and companies were inconsistent. This, in part, reflected the nascent stage of sectoral investment at the time. Our initial focus on taxonomy and consistent year-over-year (YoY) data standards have paid off. As we assembled the fourth review in our series, we began to see YoY trends in venture funding across these industries that indicate innovation investing in this sector has come of age.

Among the patterns we found in our retrospective analysis, we noticed that digital ag sectors (imagery and precision ag) have slowed in growth, owing in part to slow adoption cycles required to prove out return on investment and costs of trialing technologies across broad acreages. We are seeing a shift toward financing of later-stage rounds in this sector. We also found that other data-contingent subsectors such as crop protection—though dissimilar in growth rate of capital invested—show a similar bias toward later-stage financings. We believe that this trend represents a refocusing on field trials and proving out technologies. According to Finistere venture partner and Chief Agronomist Michael Pereira, “A well-thought-out trialing budget should be one of the first items to allocate within a budget primarily because it is a key driver of business development, not separate from it.” As companies, investors and farmers pay closer attention to field results, we expect to see improved growth and adoption rates in digital ag and crop protection segments in future years.

The rise of foodtech has been driven by the tide of changes in consumer taste coupled with calls for greater convenience and improved sustainability profiles. Growing impressively, and outpacing investment into agtech in recent years, valuations and round sizes across a variety of subverticals have bloomed. While defensible intellectual property in the food sector has historically been sparse, recent investment into the sector has clustered around deep tech developments that enable new business models, especially in novel proteins and ingredients subsectors.

Growing quickly and impacting every segment of the agrifood tech sector is the recognition of agriculture and food as sectors that greatly impact climate change. Investors and consumers alike are increasingly demanding operators across the value chain to improve sustainability. This tide will have knock-on effects on technology adoption and investment within the sector for decades to come.

As we publish our report this year, we hope that the insights and analysis we provide on the latest and retrospective trends in our sector shed light on future directions.

Sincerely,

Arama Kukutai
Founding and Managing Partner
Finistere Ventures

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2019 AgriFood Tech Investment Review

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Taxonomy

Agtech taxonomy

- **Plant science:** The modification of existing plants and organisms to improve plant health and yield, including plant breeding, development of novel traits, genetic modification/editing, and more.
- **Crop protection & input management:** The development of products and technologies that when applied improve plant yield, including the development of synthetic and natural active ingredients, biologicals, formulations, seed treatments, and nutrient technologies to improve plant or soil health and reduce other inputs.
- **Precision agriculture:** The building of software suites, data management and analytics tools for improved farm management, including the measurement of crop inputs, soil, moisture, weather, inventory, etc., typically within the realm of enterprise suites with user-friendly mobile capabilities.
- **Agriculture marketplace & fintech:** Online marketplaces for the trading, buying and selling of agricultural goods, as well as platforms for the management of related financial transactions and administration of business relationships.
- **Indoor agriculture:** The production of turnkey software and hardware systems designed for the cultivation of crops within buildings, often focused on either residential or commercial real estate markets, as well as related services and building of infrastructure.

- **Sensors & smart farm equipment:** Hardware and software systems specifically designed to monitor a range of conditions, most frequently within close proximity, plus equipment for farming, with integrative capabilities for whole platforms.
- **Imagery:** Equipment, software and hardware systems plus actual manufacturing of drones and satellites for aerial monitoring.
- **Animal technologies:** Technologies aimed at improving animal health and productivity including animal genetics, feed, veterinary medicines, hardware and software systems specifically designed to enable management of livestock and other farm animals in general, with use cases ranging from health monitoring to more efficient harvesting of related resources.

Foodtech taxonomy

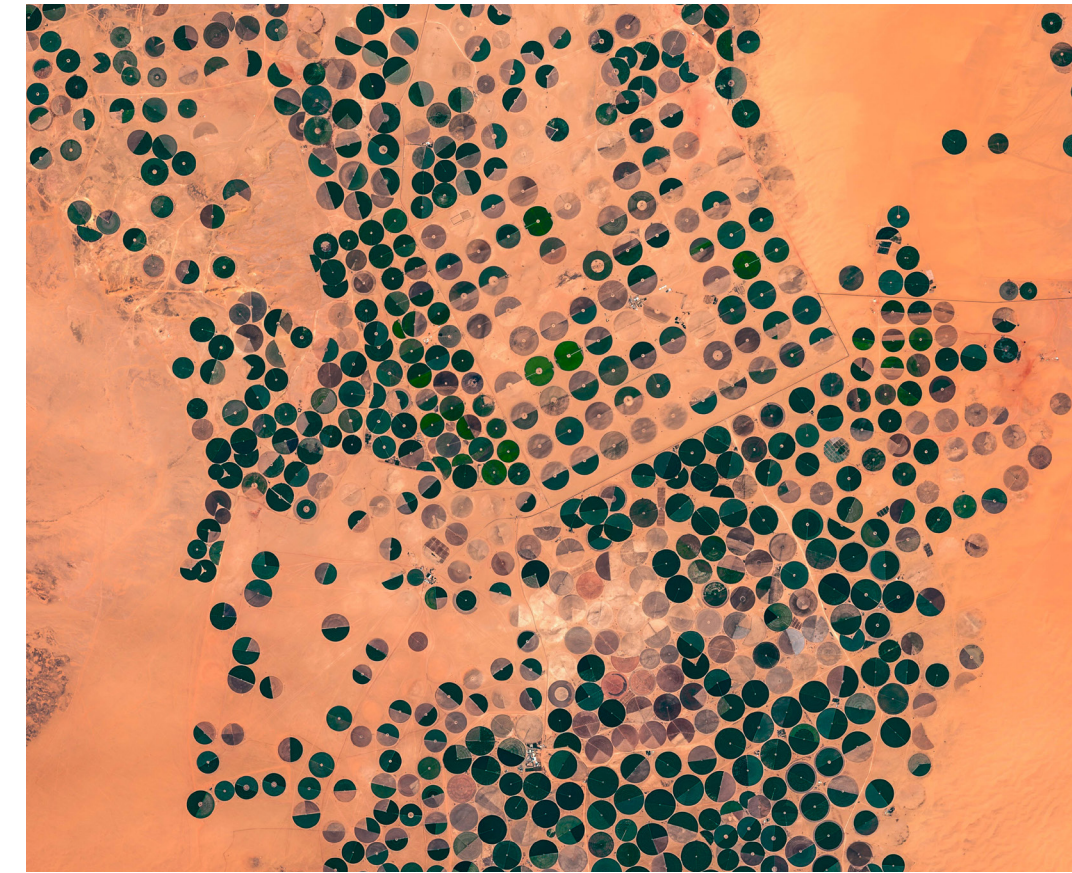
- **Meal kits & delivery:** Food logistics systems developed to facilitate grocery ordering and delivery, including subscription-based, ready-to-make meals comprising pre-portioned ingredients.
- **E-commerce:** Marketplace development services and supply-chain facing financial services for growers to facilitate direct-to-end-user distribution.
- **Alt protein & alt dairy:** Plant-based or lab-grown proteins and dairy products marketed directly to the consumers and rooted in original IP.

- **Consumer health:** Novel nutritional products, including nutraceuticals and beverages marketed as consumer-packaged goods.
- **Novel ingredients:** Functional ingredients associated with health or nutritional claims; industrial ingredients targeting improvements in taste, texture, freshness or appearance of food or providing alternatives to traditional ingredients.
- **Processing & packaging:** Discovery or commercialization of novel processing & packaging solutions, including technologies around food safety, cost-effective production or shelf-life extension.
- **Supply chain:** Traceability, food waste, marketplaces & procurement software and other technologies aimed at transforming, automating or improving the food supply chain.
- **Hardware enabled:** Food preparation or distribution via next-gen vending machines, smart ovens or robotics used in the home or commercially for production.

Note: This taxonomy is kept consistent from year to year in our datasets to enable comparison over time.

PitchBook methodology

- PitchBook includes equity investments into startup companies from an outside source. Investment does not necessarily have to be taken from an institutional investor. This can include investment from individual angel investors, angel groups, seed funds, venture capital firms, corporate venture firms and corporate investors. Investments received as part of an accelerator program are not included. However, if the accelerator continues to invest in follow-on rounds, those further financings are included.
- **Angel & seed:** PitchBook defines financings as angel rounds if there are no PE or VC firms involved in the company to date and we cannot determine if any PE or VC firms are participating. In addition, if there is a press release that states the round is an angel round, it is classified as such. Finally, if a news story or press release only mentions individuals making investments in a financing, it is also classified as angel. As for seed, when the investors and/or press release state that a round is a seed financing, or it is for less than \$500,000 and is the first round as reported by a government filing, it is classified as such. If angels are the only investors, then a round is only marked as seed if it is explicitly stated. It should be noted that in order to better reflect the agtech seed-stage market, this report increased that round size limit to \$2 million or less. However, some seed-stage rounds in agtech may still not have been captured as of yet as a consequence.
- **Early-stage:** Rounds are generally classified as Series A or B (which we typically aggregate together as the early stage) either by the series of stock issued



in the financing or, if that information is unavailable, by a series of factors including: the age of the company, prior financing history, company status, participating investors, and more.

- **Late-stage:** Rounds are generally classified as Series C or D or later (which we typically aggregate together as the late stage) either by the series of stock issued in the financing or, if that information is unavailable, by a series of factors including: the age of the company,

prior financing history, company status, participating investors, and more.

- **Corporate venture capital:** Financings classified as corporate venture capital include rounds that saw both firms investing via established CVC arms or corporations making equity investments off balance sheets or whatever other non-CVC method actually employed.



Plant sciences

Animal technologies

Imagery

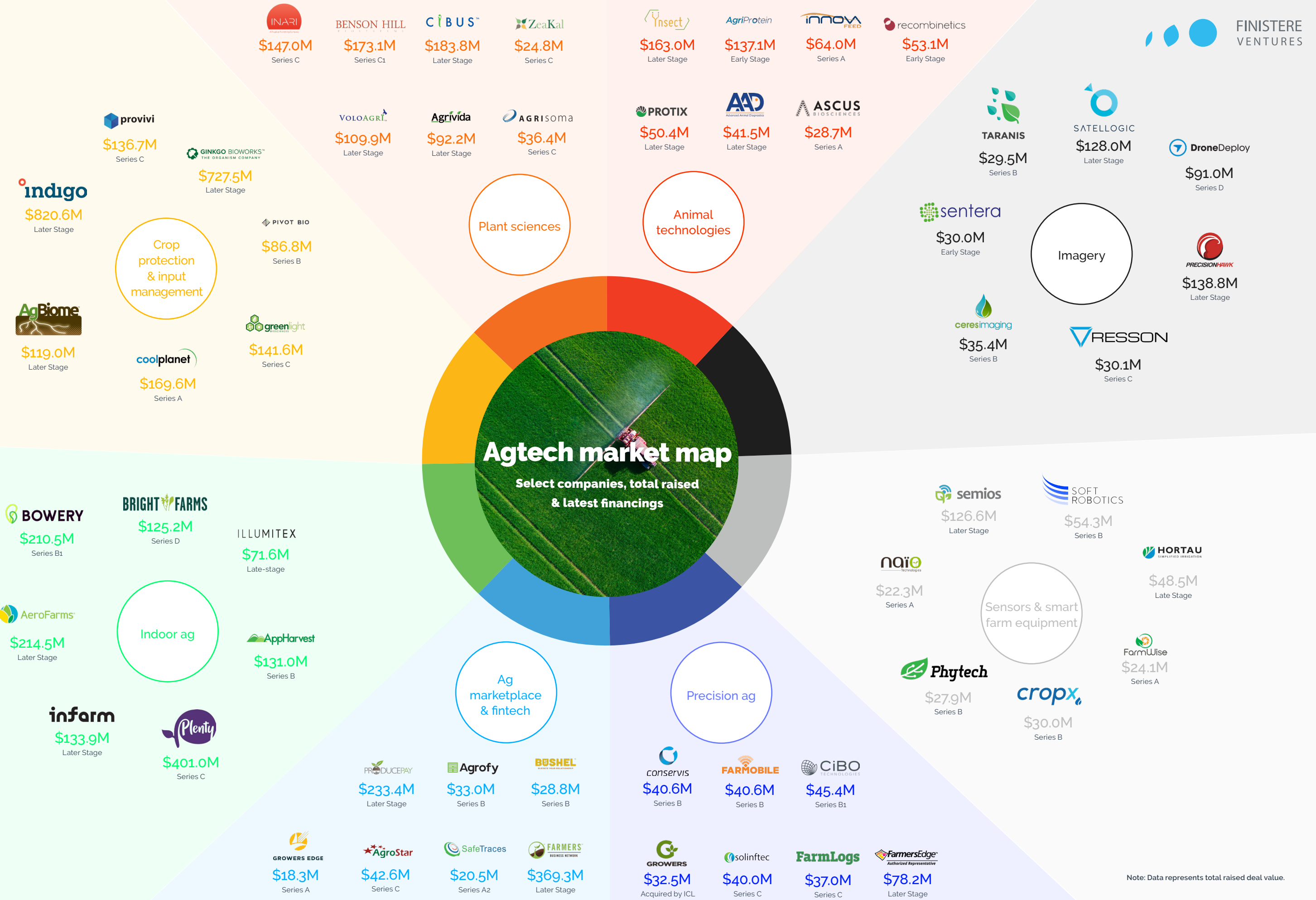
Sensors & smart farm equipment

Precision ag

Ag marketplace & fintech

Crop protection & input management

Indoor ag



Note: Data represents total raised deal value.

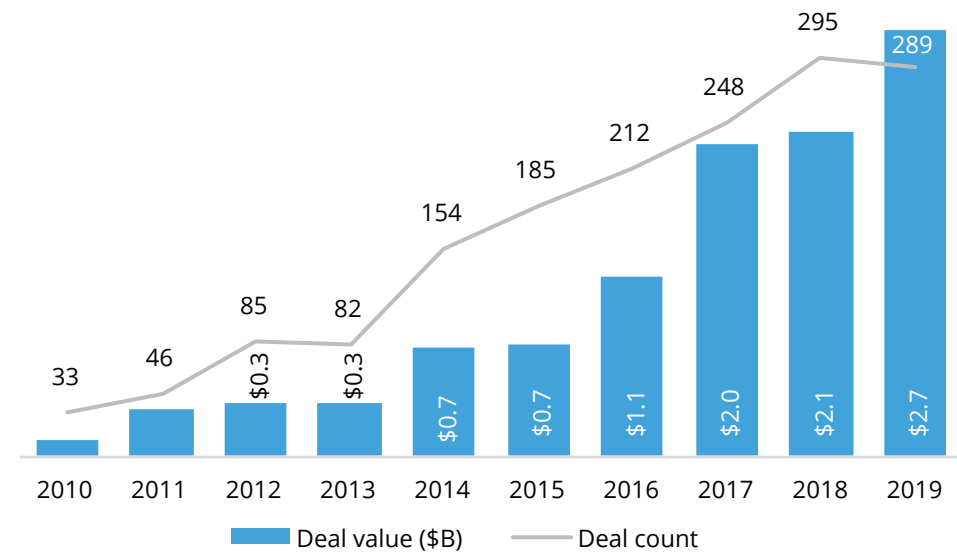
Agtech market update

Agtech startups had another record year for aggregate deal value in 2019, continuing the trend of growth in capital pouring into the sector since 2010. While agtech continues to expand at an impressive annual rate of 58% per year (jumping 4x since 2015), over the last decade, the investment ecosystem has changed dramatically. Later-stage deals comprise the lion's share of capital invested into the sector, and significant growth in pre-money valuations in later-stage deals reflects the maturity of companies. Significantly, we are seeing investment interests evolve with tradeoffs in growth between subverticals that had captured the interest of investors earlier in the decade. Here we provide an overview of the agtech investment ecosystem in 2019, explore how it has changed in the past decade and finally draw some conclusions as to how we see the market continue to mature across the next wave of deals.

The agtech venture ecosystem closed the decade stronger than ever, with total capital committed into agtech reaching \$2.7 billion invested across 289 venture financing rounds. Furthermore, median pre-money valuations across early- and later-stage venture rounds more than doubled between 2018 and 2019. Interestingly, while valuations grew aggressively, median round sizes did not enjoy the same rate of growth. Median deal size across late-stage VC deals increased by 10% to \$11 million in 2019 and median deal sizes for early-stage deals grew from \$2.2 million in 2018 to \$3.2 million in 2019. The disparate growth rates between pre-money valuations and median round sizes across these two stages suggests that competition for quality deals is clearly producing favorable conditions for companies on a valuations front.

This trend in increasing valuations (coupled with timelines to exit) may also be hampering first-time VC activity. 2019 saw first-time VC activity in agtech fall by 27.7% compared to 2018. While the growing crop of generalists that have started to participate in sizable late-stage rounds in recent years continues to buoy aggregate values, we believe that as agtech continues to mature as a sector, and as quality, late-stage deals become more expensive, seasoned specialist investors will begin to stand

Agtech VC deal activity



Source: PitchBook | Geography: Global

out as the winners, having been able to identify risk-adjusted quality opportunities at earlier stages.

A shift in capital allocation by stage occurred over the last decade, with distribution between early- and late-stage deals in agtech completely reversing. In 2019, over 70% of all venture capital invested into agtech was allocated into later-stage venture deals. This was particularly exacerbated by funding for crop protection and input management where 95% of capital was invested in later-stage companies. Capital allocation to later-stage agtech has grown steadily over the last five years, reaching a high of \$1.9 billion deployed in 2019. This is in stark contrast to earlier in the decade where seed and early-stage venture dominated agtech investment totals. While later-stage venture comprises the majority of capital invested into agtech, it only represents 27% of deals transacted by deal count (78 of 289 VC financings in 2019). Deal activity across all three stages of agtech venture investment has remained robust. While the agtech sector continues to mature, with later-stage companies requiring capital to scale, there continues to be a healthy pipeline of early- and seed-stage agtech companies being financed.

Who's leading agtech?

The major driver of agtech's success over the past ten years has been the emergence of a network of seasoned, specialized investors returning across several funding stages to help startups scale. The majority of these investors are US-based—unsurprising given that investments into US-based agtech companies made up over half of all deals financed in 2019. US-based companies also received 66% of all agtech venture capital in 2019, even as European agtech companies doubled in capital received. Taken together, this suggests that the heart of agtech venture is still solidly US-anchored, while YoY growth in other geographic regions continues to expand, especially in the EU.

Taking a look at investors that have been most active within agtech over the last decade reveals a similar picture. Of the top ten funds most active in leading agtech financings, over half are US-based funds, with the most active deal leaders being Cultivian SandBox Ventures followed by fellow Chicago-based fund Seed 2 Growth Ventures and Finistere Ventures. Several corporate venture groups such as Leaps by Bayer (formerly Monsanto Growth Ventures), Syngenta Ventures and Temasek also feature on this list of most active leading

funds, reflecting the history of agtech venture featuring active participation by corporate-backed groups. A strong network of highly active co-investing funds has also bolstered the agtech venture ecosystem over the last decade. These investors collectively have participated in over 230 financings, providing many startups with the capital, support and expertise to scale.

Sector trends

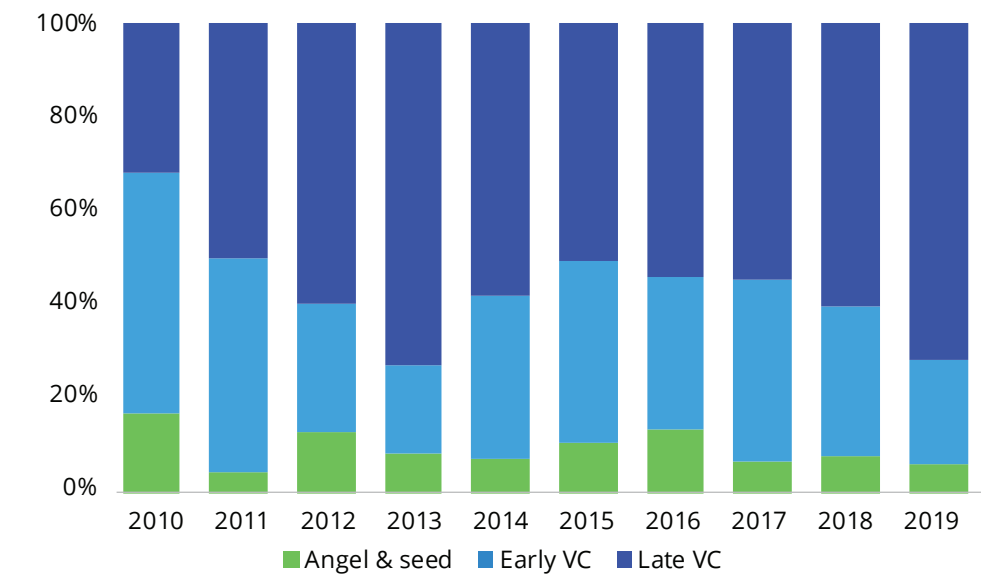
Investors continue to place big bets on longstanding trends informing innovation across the space, particularly those technologies with potential application outside ag. While agtech investment opportunities are heavily weighted toward companies seeking efficiencies in production, quality or sustainability to existing farmland systems, the fastest-growing segment in 2019 was indoor agriculture. This segment seeks to disrupt traditional agriculture through integrated indoor production systems that benefit from technology tailwinds across lighting systems, plant breeding and data science. Investment in this category almost doubled since 2018, reaching a new high of \$541 million in 2019. Notably AeroFarms, Infarm, AppHarvest and Bowery Farming raised significant rounds in 2019. Nevertheless, Plenty still leads the sector with some \$400 million in capital raised.

While indoor ag led in terms of growth, crop protection and input management continued to lead with 37% of total invested capital in 2019. Six companies raising Series C rounds or beyond* were responsible for over 70% of the funding in this segment, speaking to the maturing nature of this vertical, which is unsurprising given the \$58 billion market technologies in this segment address globally. At \$3.5 billion in aggregate value generated over the past decade, agtech investors have poured \$786.5 million more into this subvertical than the next two largest buckets combined, with the capital-intensive operations of indoor ag and plant science representing \$2.8 billion of capital raised in the last decade. In 2019, venture investment in crop protection & inputs increased by 37% over 2018 to reach a record sum of \$967 million (led by Gingko Biowork's \$290 million Series E round, the largest-ever raised in agtech, which the company secured at a \$4.5 billion pre-money valuation).

Digital technologies (imagery, precision agriculture and sensors & farm equipment)

*See appendix

Agtech VC deals (\$) by stage



Source: PitchBook | Geography: Global

made up approximately 41% of total activity by deal count in 2019. However, 2019 saw a decline in total number of deals (4%) and only a marginal uptick (5.6%) in total capital invested. This reflects cooling interest in a segment that previously resulted in landmark exits with the likes of Climate Fieldview, Granular and Blue River. Companies that intend to drive breakaway growth will need to demonstrate clear and broad value to customers that have been typically slow to adopt new technology or navigate the complexities of channel penetration. Within the sensors & farm equipment segment, we continue to see companies providing insights built off proprietary hardware driving value creation. Deal value in this subvertical increased by 37% YoY to \$220.6 million, topping \$200 million in aggregate for the first time. This can be traced to a swath of robotics companies attempting to bring automation to the farm and supply chain, led with a \$25 million Series B for Soft Robotics and funding events for FarmWise Labs, Verdant Robotics, Tevel Aerobotics, Invert Robotics and Advanced Farm Technologies. Hortau and CropX are also notable companies that raised later-stage rounds in 2019, integrating sensing technology with data science to deliver actionable or predictive insights to customers.

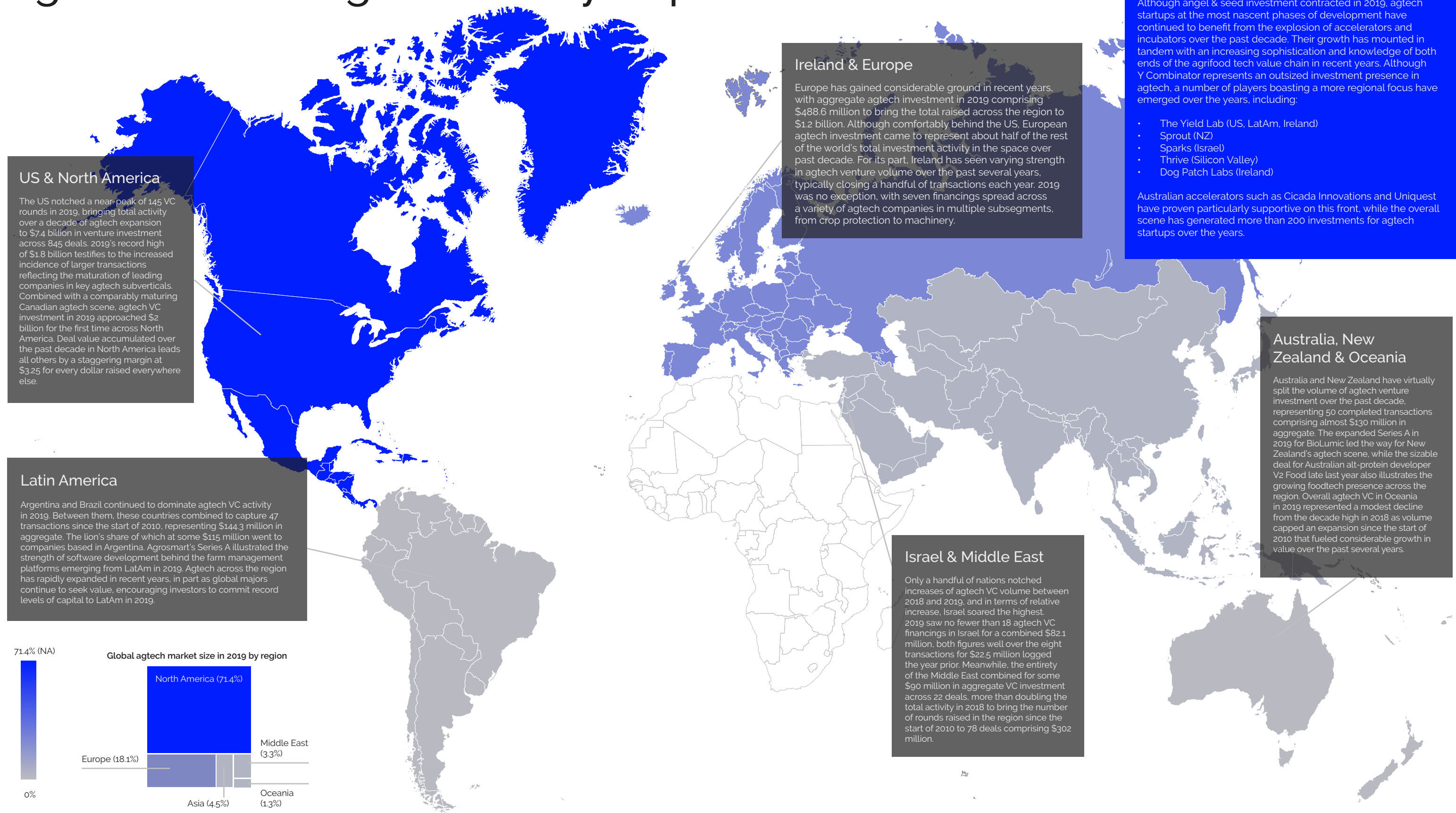
Invested capital across precision agriculture technologies remained relatively flat, oscillating around the \$100 million mark for the past four years. 2019 saw \$116 million invested across

34 deals. Roughly 60% of capital was invested in early- or seed-stage companies. Investment across companies delivering insights anchored around imaging capture and analysis saw a 17% dip in 2019, with \$184 million invested across 21 deals. In contrast with precision ag, the bulk of capital (about 64%) was deployed across later-stage deals, notably Satellogic, DroneDeploy and PrecisionHawk. Viewed over the last five-plus years, it's clear that the digital investment opportunity has consolidated with an expected shakeout ahead as the top startups position themselves to build profitable companies through product improvements, better integration (beyond point solutions) and in turn aim to drive market adoption.

With longer lifecycle investments characterizing plant sciences, commitments to this subvertical resulted in a drop of some 28% from 2018 to \$206.4 million across just 17 completed transactions in 2019. But these funding figures will likely climb again in years ahead given how valuable seed and plant traits are to the wider industry.

Finally, ag marketplace & fintech turned in its top performance yet last year as deal value doubled compared to 2018, exceeding \$270 million in aggregate value across just 25 funding rounds. The cloudy picture around trade over the last year has on the one hand pushed farm bankruptcies above 20% in the US. However, the debt-fueled dynamics of farming have also encouraged the ongoing revision of strategies

Agtech deal value global density map



US & North America

The US notched a near-peak of 145 VC rounds in 2019, bringing total activity over a decade of agtech expansion to \$7.4 billion in venture investment across 845 deals. 2019's record high of \$1.8 billion testifies to the increased incidence of larger transactions reflecting the maturation of leading companies in key agtech subverticals. Combined with a comparably maturing Canadian agtech scene, agtech VC investment in 2019 approached \$2 billion for the first time across North America. Deal value accumulated over the past decade in North America leads all others by a staggering margin at \$3.25 for every dollar raised everywhere else.

Latin America

Argentina and Brazil continued to dominate agtech VC activity in 2019. Between them, these countries combined to capture 47 transactions since the start of 2010, representing \$144.3 million in aggregate. The lion's share of which at some \$115 million went to companies based in Argentina. Agrosmart's Series A illustrated the strength of software development behind the farm management platforms emerging from LatAm in 2019. Agtech across the region has rapidly expanded in recent years, in part as global majors continue to seek value, encouraging investors to commit record levels of capital to LatAm in 2019.

Ireland & Europe

Europe has gained considerable ground in recent years, with aggregate agtech investment in 2019 comprising \$488.6 million to bring the total raised across the region to \$1.2 billion. Although comfortably behind the US, European agtech investment came to represent about half of the rest of the world's total investment activity in the space over past decade. For its part, Ireland has seen varying strength in agtech venture volume over the past several years, typically closing a handful of transactions each year. 2019 was no exception, with seven financings spread across a variety of agtech companies in multiple subsegments, from crop protection to machinery.

Global accelerators & incubators

Although angel & seed investment contracted in 2019, agtech startups at the most nascent phases of development have continued to benefit from the explosion of accelerators and incubators over the past decade. Their growth has mounted in tandem with an increasing sophistication and knowledge of both ends of the agrifood tech value chain in recent years. Although Y Combinator represents an outsized investment presence in agtech, a number of players boasting a more regional focus have emerged over the years, including:

- The Yield Lab (US, LatAm, Ireland)
- Sprout (NZ)
- Sparks (Israel)
- Thrive (Silicon Valley)
- Dog Patch Labs (Ireland)

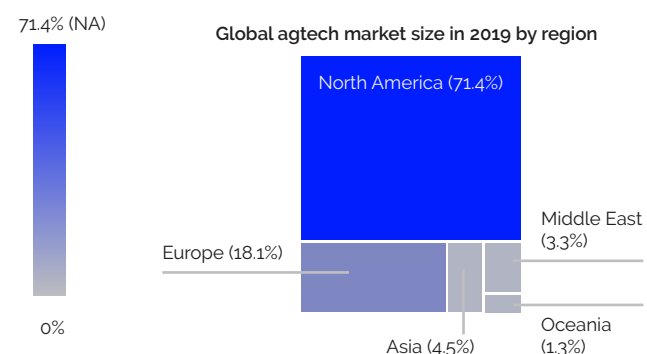
Australian accelerators such as Cicada Innovations and Uniquet have proven particularly supportive on this front, while the overall scene has generated more than 200 investments for agtech startups over the years.

Australia, New Zealand & Oceania

Australia and New Zealand have virtually split the volume of agtech venture investment over the past decade, representing 50 completed transactions comprising almost \$130 million in aggregate. The expanded Series A in 2019 for BioLumic led the way for New Zealand's agtech scene, while the sizable deal for Australian alt-protein developer V2 Food late last year also illustrates the growing foodtech presence across the region. Overall agtech VC in Oceania in 2019 represented a modest decline from the decade high in 2018 as volume capped an expansion since the start of 2010 that fueled considerable growth in value over the past several years.

Israel & Middle East

Only a handful of nations notched increases of agtech VC volume between 2018 and 2019, and in terms of relative increase, Israel soared the highest. 2019 saw no fewer than 18 agtech VC financings in Israel for a combined \$82.1 million, both figures well over the eight transactions for \$22.5 million logged the year prior. Meanwhile, the entirety of the Middle East combined for some \$90 million in aggregate VC investment across 22 deals, more than doubling the total activity in 2018 to bring the number of rounds raised in the region since the start of 2010 to 78 deals comprising \$302 million.



for lending against the value of farmland as a form of real estate. Enterprise resource planning systems can assist in assigning those valuations based on yields, soil quality and productivity, with multiple lenders, including Wells Fargo, trying to combine ERP and data-collection tools to inform the underwriting process. In 2019, Farmers Business Network raised \$175 million from Expanding Capital and Kleiner Perkins at a post-money valuation that minted a new agtech unicorn in part on this promise. More importantly, the outsized round illustrates the renewed interest in farm management systems that can connect operations to cost savings mechanisms based on data-driven financing options in an uncertain macro-environment.

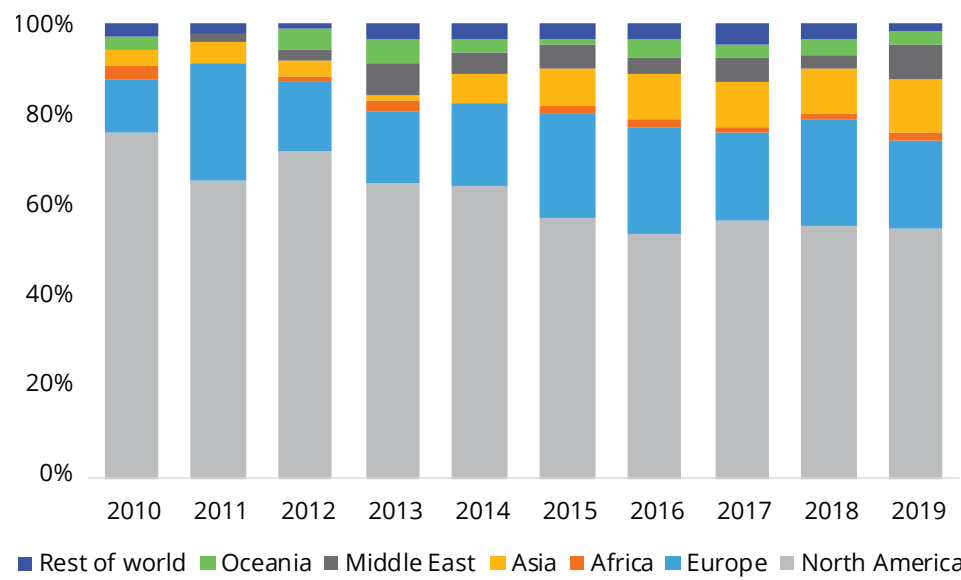
The ratio of value to volume in the leading subverticals speaks to the trend of increasing step-ups as multiples across all stages met or comfortably exceeded 1.5x post- to pre-money valuation increases to close the decade, with only the early stage registering a YoY decline. Across later-stage deals, median valuations almost doubled to circle the \$100 million mark. When looking at some of the companies that raised capital,* we find a number that have the potential to massively affect agricultural systems, targeting outsized efficiency improvements (cost savings or yield uplift) across broad acre row crops or entirely novel agricultural production systems.

Sector opportunities

With a record year in 2019, we enter the 2020s with two key areas attracting consistent capital in the agtech domain. Digital ag and crop protection have played to the clear opportunity to digitize the world's largest remaining analog industry and a search for the next blockbuster franchises in helping the farmer with their crops, particularly in biologicals. Initially, exit activity in the digital domain looked promising with banner exits such as Monsanto's acquisition of Climate Corporation in 2013, and Granular by Corteva. Likewise, in crop protection, the Bayer acquisition of Agraquest in 2012 seemed set to galvanize a new wave of crop protection products, and certainly the level of investment into the segment seems to bode well for future deals. With that said, trade sales within the agtech sector have been sidelined in recent years due to consolidation impact, depressed commodity prices and macroeconomic factors such as trade wars along with the industry's conservatism. So

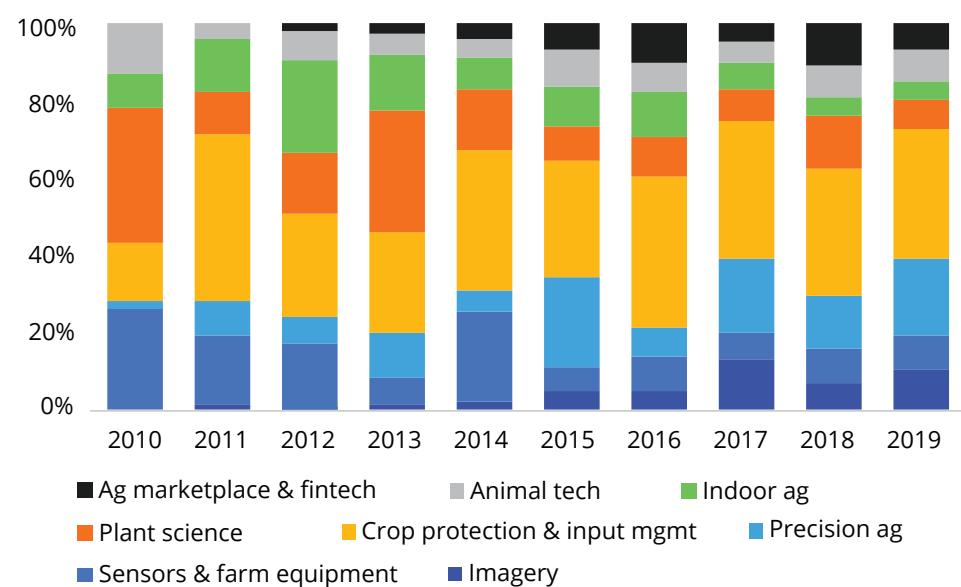
*See appendix

Agtech VC deals (#) by investor region



Source: PitchBook | Geography: Global

Agtech VC deals (\$) by subvertical



Source: PitchBook | Geography: Global

where do opportunities within heavily invested sectors lie as agtech continues to mature?

While crop protection has received over \$3.5 billion in invested capital over the last decade, the majority of this capital has been invested into biological, or naturally derived technologies. Despite the boom of investment within crop protection among biologicals, only a handful of synthetic active companies have been financed over the last decade. Increasing regulatory constraints on conventional crop protection actives made the promise of

biological crop protection products enticing in comparison. However, the last decade of research has produced few (if any) blockbuster products in this segment. With consolidation among major ag corporations resulting in reduced overall investment into research and development pipelines, substantial opportunity has been created for small molecule chemistry discovery outside of corporate environments.

Digital agriculture (Imagery, sensors & smart farm equipment, and precision ag) represented a massive opportunity at the outset of the

decade, and continues to draw significant investor interest as a group. However, the timeline for digital transformation within agriculture has proven to take longer than many anticipated due to challenges with farmers (and channel partners) integrating diverse data and insights into meaningful action. We believe that there will be a second wave of investment focusing on not only integration, but working with partners downstream who value the datasets being collated at farm level—for example, in climate certification or consumer valued insights such as traceability. The age of big data on farms is likely to morph beyond agronomy to consumer and value chain benefits.

Perhaps the single largest emerging consideration in agtech investment is the impact of climate change and its repercussions for the farm ecosystem. Countries such as Denmark, Ireland and New Zealand all face pressure from regulators and their electorates to find ways to reduce the emissions and impact of animal production. While demand for protein rises, increasing output without consideration of environmental impact and sustainability concerns is no longer a straight option for farmers or their supply chain partners. The outcome here is a new set of use cases for digital innovation, seed and crop protection products, nutrients and even production systems that dovetail with trends in foodtech around plant-based and cultured protein technologies.

Investor trends

Although first-time investment counts in agtech fell in 2019 by 27.7% compared to 2018, new entrants committed more capital to the space as allocations approached \$60 million in aggregate deal value. This increased investment has come despite a persistently weak exit environment. After spiking in 2018, VC-backed exit activity declined sharply in 2019, falling by more than half YoY as overall value fell below \$100 million.

Late-stage investment enthusiasm drove median pre-money valuations to record highs in 2019, doubling YoY to top the \$100 million mark at the late stage. Volume also confirmed overall interest in backing mature companies, as counts at this end expanded again in 2019. However, late-stage enthusiasm appears to have come at the expense of angel & seed activity. Transactions contracted considerably

YoY at this stage in 2019, declining by 22.3% as fewer than 100 rounds closed—the weakest annual performance posted since 2015.

Meanwhile, broader M&A activity, including buyouts, remained on an expansionary footing, with deal value achieving a record \$4.9 billion in 2019 across 16 completed deals. This bodes well for future funding in the space, as established players with the ability to implement and scale novel technologies confirm that single-point solutions do not provide enough value for farmers—or their venture capital investors to produce return. As the various segments of agtech continue to mature, the sector will see more consolidation via roll-ups to major players, public or private, seeking both greater scale and scope via acquisition. This scenario has already started to inform the approach taken by generalist investors. Both Q3 and Q4 represented VC activity levels near historic highs, comprising \$1.4 billion across 135 completed funding rounds as some of the biggest names in the space closed on fresh funding rounds in the back half of the year. As more mature companies achieve scale, even with grower adoption continuing to lag, the digital transformation that already disrupted other legacy industries has presented an opportunity for investment in agtech by historically non-ag investors.

Complicating this picture potentially further in the future, 2019 also represented the year that the trade dispute between the US and China hit the wider market for ag products. The total value of ag exports to China has fallen more than half since 2017. Although this development hit investment harder higher up the value chain in foodtech, which is more export-dependent, a lot remains at stake for agtech investors in this dispute going forward. Confidence in outlooks are essential given farming's debt-fueled near-term spending and longer growth horizons. The cloudy picture around trade over the last year has made some wary of making forward-looking commitments.

Meanwhile, the US represented the largest target market for agtech investment again in 2019 as companies raised \$1.8 billion across 145 deals against the backdrop of the dispute with China. However, effects of the trade dispute on incumbents such as Deere were palpable in the year, with ramifications for the exits space to follow as M&A has replaced R&D

in recent years. Although its leadership role in agtech investments remains intact, Europe is closing the gap with the US. In 2019, investors doubled capital deployed into agtech deals in Europe compared to 2018, posting nearly \$500 million for the first time across just 56 financing rounds. This YoY leap in value follows the entry of private equity and sovereign wealth funds into European agtech in part as a response to mandates for sustainability investment screens and a complementary need to increase investment from a food security perspective.

As the evolution of agtech has illustrated over the past decade, emerging technologies developed for farming have ready applications in the areas of risk management, including at the nexus of banking and insurance that have more readily appealed to outside and nontraditional ag investors of late. The confluence of these developments could do more than any other to shape the broad contours of the venture investment landscape in the coming decade, as the field of investors has started to diversify, drawing on a growing base of established, generalist pools of capital, with the likes of Amazon, KKR, Microsoft, Sequoia, SoftBank, Temasek and T. Rowe Price anchoring some of the largest rounds transacted in 2019.

The maturation of the agtech space over the past decade has demonstrated particular resilience thanks in part to its ability to attract new investors, suggesting that 2019's underperformance on this metric represents an anomaly—not a new normal. Moreover, the most active investors over that time reveals the development of sophisticated investor networks capable of sustaining a variety of companies focused on different corners of the agtech market—and in recent years further up the value chain in foodtech, as well. As we enter the 2020s, we anticipate continued development of new robust and diverse investment cases in agtech driven by:

1. Growing recognition of the impact of agriculture and food production on climate change
2. The need for new technology solutions across the entire supply chain and spectrum of technology

Agtech investor relationships

This graphic illustrates the coinvestment relationships between the top lead investors and coinvestors within the agtech sector. Gray bubbles indicate leading coinvestors, colored bubbles denote lead investors and lines indicate a coinvestment relationships.

Top lead investors	# deals led	# of coinvestment relationships	Top three coinvestors
Cultivian Sandbox	14	90	Middleland Capital, ARCH Venture Partners, Sandbox Industries
S2G Ventures	8	115	Middleland Capital, Lewis & Clark Ventures, Fall Line Capital
Finistere Ventures	8	90	Innovation Endeavors, OurCrowd, Middleland Capital
Leaps by Bayer	7	96	Prelude Ventures, Prolog Ventures, Data Collective
SP Ventures	6	16	Baita, SVG Ventures, Syngenta Ventures
Temasek	6	44	GV, Pontifax Agtech, Spruce Capital Partners
Syngenta Ventures	6	16	Alexandria Venture Investments, ARCH Venture Partners, Fall Line Capital
Google Ventures	5	122	Khosla Ventures, Kleiner Perkins, Acre Venture Partners
Anterra Capital	5	46	Open Prairie Ventures, Cultivian Sandbox Ventures, Pangaea Ventures

Source: PitchBook | Geography: Global



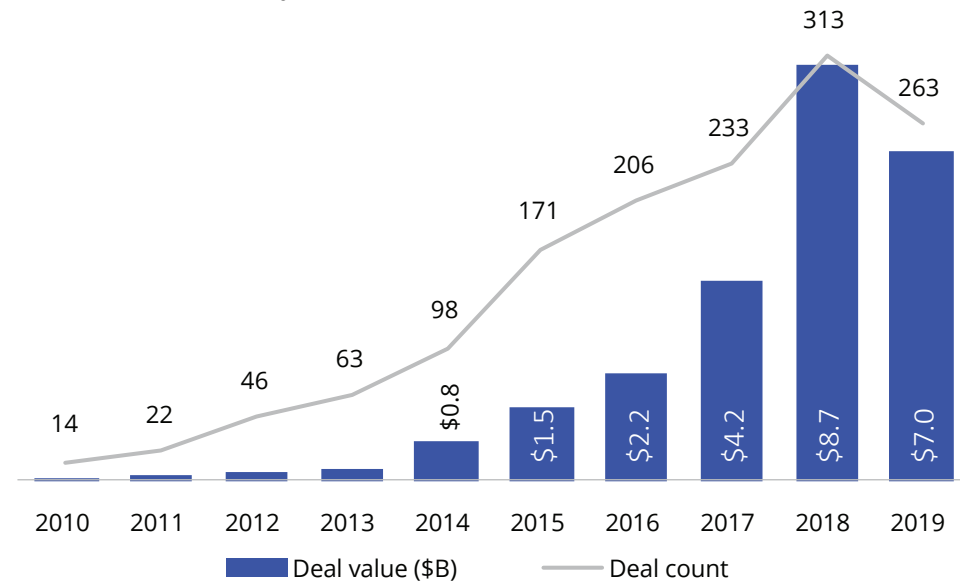
Foodtech market update

Foodtech turned in another outsized performance in 2019. Even as bets on the most hotly contested areas of the market cooled, it still comfortably outpaced the performance of all but the record-setting figures posted in 2018. VC invested into the space comprised \$7 billion across 263 completed rounds in 2019, topping the annual average for the past decade of \$2.5 billion across 143 rounds. This represents a \$1.7 billion contraction from the 2018 record high of \$8.7 billion. However, it is important to note that the clawback in investment activity can be almost entirely attributed to Asian markets, which contracted from \$4 billion in 2018 to \$1.2 billion in 2019. Excluding Asia, invested capital grew 22% YoY, especially driven by activity in Europe, where the \$720 million invested in 2019 was 2.6x above the prior year. Additionally, these commanding investment sums were more than double the investment seen further up the value chain in agtech, demonstrating that foodtech has proven far more amenable over the past decade to blitzscaling, deploying capital to exploit network effects in a manner more redolent of Facebook than the farm to rapidly achieve critical mass. In this way, foodtech has expanded its scope far more in line with other consumer-facing areas of venture-backed tech that have emerged since 2010 in part due to consumers demanding greater convenience while not compromising nutrition or quality. However, changes in consumer preferences have echoed further up the supply chain, driving investments in technologies delivering a more sustainable and traceable food system.

2019's performance brought total capital invested in the sector over the last decade to \$25.4 billion. About half of this capital was deployed across roughly 120 companies in later-stage deals over the last two years alone. Funding across companies at the expansion stage cemented YoY gains, particularly within the meal kit & delivery space and e-commerce where the majority of capital went toward scaling later-stage companies as they enter new geographies and markets. Surprisingly, the e-commerce subvertical led the downward trend for foodtech investment in

*See appendix

Foodtech VC deal activity



Source: PitchBook | Geography: Global

2019, with aggregate capital committed falling by two-thirds. Both Instacart and Miss Fresh raised billions in VC between them until 2019, leading the land-grab race as they expanded their market dominance within North America and Asia. The largest deal in 2019,* a \$200 million Series D round raised by Benlai Life, paled in comparison. Other emerging companies in the space, such as ezCater or GoodEggs are defining their competitive advantage by leveraging data science to drive predictability through a unique understanding of their consumer, delivering a hyper-curated and personalized experience. Developing these vertically integrated core competencies will be necessary to disrupt the inherent cost advantages from long-established grocery retail.

While meal kit startups were once the darlings of the food tech sector, underperformance of former VC-backed meal kit startups in public markets continues to weigh on investor sentiment. However, food delivery continues to thrive and topped the league table of 2019's most sizable deals as companies in this segment continue to find new high-water marks for capital raised. Rappi, the largest on-demand delivery startup in South America secured the year's biggest VC deal, a \$1 billion

investment led by SoftBank at a \$2.5 billion pre-money valuation. With the \$100 billion Vision Fund far from empty, SoftBank also cut a \$750 million check to goPuff in August. These investments in consumer food delivery target the logistical challenge of "the last mile," which can account for some 40% of the total cost to move goods. However, more mature players extended their dominance in this crowded corner of the market, with DoorDash bringing in some \$1.1 billion in total VC last year led by Temasek, with participation from prior investors SoftBank, DST Global, and Sequoia, among others, ahead of its recently disclosed IPO plans. It is important to note that analysis of this segment excludes capital raised by broader mobility platforms, like Uber or Go-Jek given food is not necessarily a leading cornerstone in their strategy.

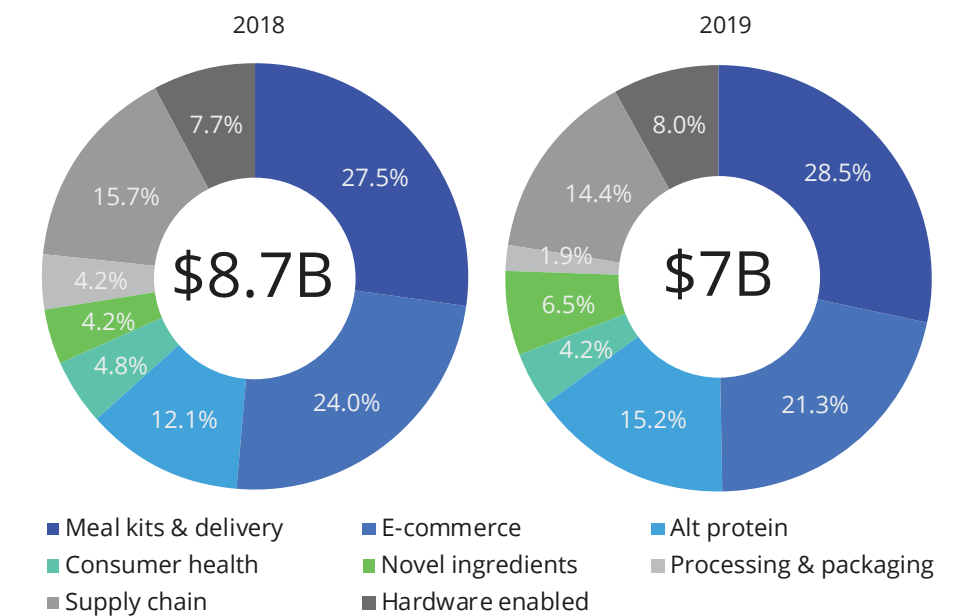
Moving on from these two categories, it was exciting to see investor focus pivoting into evolving categories like novel ingredients and alternative proteins. Rooted in proprietary technology combining data science and molecular biology to drive cost reductions in precision fermentation, companies are synthesizing novel ingredients to either mimic or actually produce proteins traditionally derived from animal agriculture. Dairy, eggs,

poultry, beef or fish—you name it, VC-backed companies are developing products that deliver the animal-free and sustainable qualities consumers are seeking without compromising on taste or mouthfeel. At \$700 million invested, this category captured a greater share of investment than ever in 2019. The likes of Impossible Foods, Perfect Day and Clara Foods all attracted significant funding rounds encouraged in no small part by Beyond Meat's successful debut in 2019. Like indoor agriculture, this category is betting the future of food production will take place in autonomous, industrial settings co-located with large population centers.

Growing concern among consumers over the impact of agricultural production on exacerbating climate change is translating into changing buying patterns. Therein lies the opportunity for companies that are able to deliver the same quality and nutrition consumers seek in a more sustainable manner. Aside from the surge in nontraditional sources of proteins, this trend has also drawn capital up the value chain. In 2019, \$791 million was invested across companies redesigning the way food moves to people's plates. Companies like Ninjacart, Misfits Markets, Imperfect Foods and Full Harvest seek to connect consumers and businesses in a more direct way to farmers, minimizing inefficiency and food waste along the way. In 2019, we also saw the rise of CloudKitchens, the largest deal across this subvertical with \$700 million raised, which seeks to democratize food production delivering operating efficiencies and lowering upfront investment for restaurant operators. Finally, although only representing \$118 million invested in 2019, startups are using proprietary hardware to gather unique data lakes that drive personalized food experiences to the mass markets without sacrificing quality or taste. Two Chicago born and bred companies, Farmer's Fridge and Tovola are doing just that through vertically integrated, full-stack vending machines and automated ovens, respectively, to solve lunch and dinner with fresh cooked, clean ingredient options for the modern-day consumer.

Altogether, the subverticals of processing & packaging, hardware enabled, supply chain and alt protein have combined for a commanding \$5.9 billion in aggregate VC investment over the past decade.

Foodtech VC deals (#) by subvertical



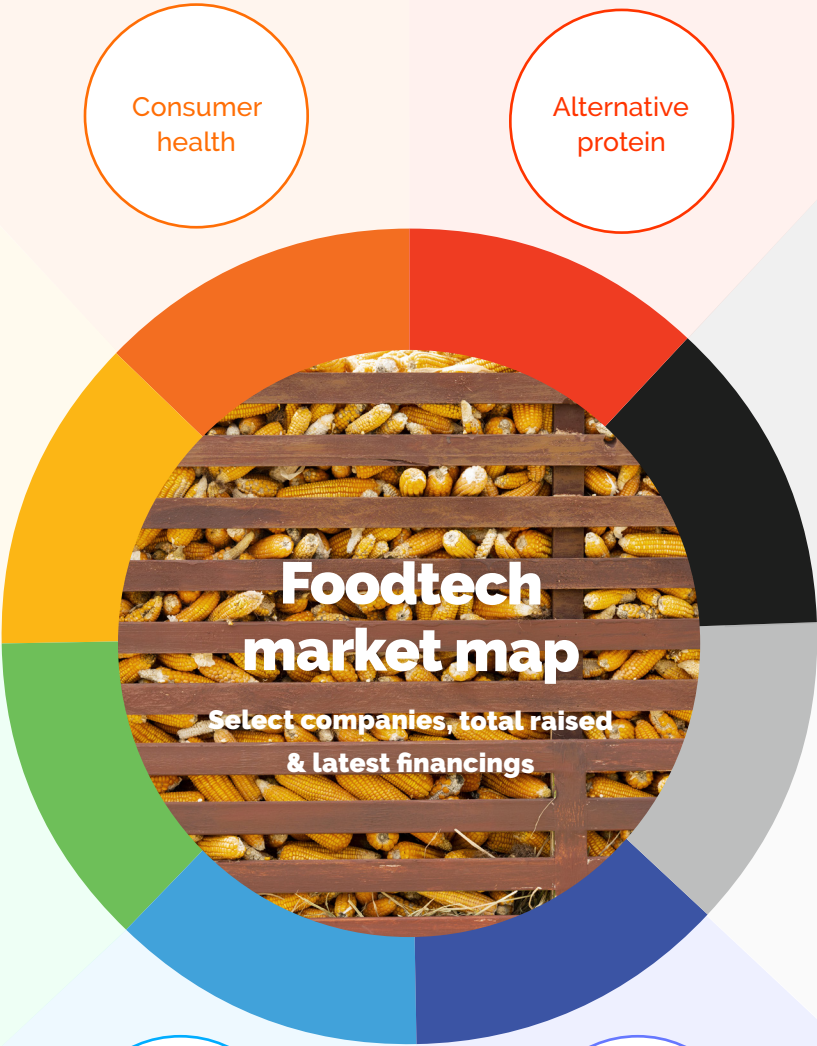
Source: PitchBook | Geography: Global

As the foodtech ecosystem has matured, companies at the most nascent phase have also capitalized on growing investor appetite. Meanwhile, higher valuations in later-stage companies have led investors to support the development of novel IP at earlier stages. Since securing just \$2.4 million in aggregate value at the top of the decade, angel & seed investment has expanded at a CAGR of 64% to help funding at this burgeoning stage approach \$820 million in sum over that period. Last year alone, angel & seed stage deals commanded \$205 million in value, a record sum and an increase of about 14.7% over 2018 even as deal count contracted by 14% YoY. Likewise, investors committed more in total VC at the expansion stage in 2019 than ever before while activity comprised a decline in overall financings of some 16% YoY. Investors targeting earlier points in a company's lifecycle with larger checks pushed the median valuation for angel & seed stage companies to \$8.5 million, a 44% increase over the figure posted in 2018. Even more precipitous has been the rise in median valuations at the late stage as the capital-intensive areas of foodtech have pushed this figure up from \$69.9 million as recently as 2017 to \$223.4 million in 2019.

Thanks in no small part to record levels of dry powder in the venture ecosystem targeting

the wider consumer space, deal size inflation for foodtech, though broadly consistent with the persistence of rising valuations over the past decade, pushed median deal sizes up once again in 2019 for all but late-stage rounds. Although this increase was slightest for angel & seed deals, climbing from just \$1.8 million in 2018 to \$2.7 million, it pushed deal size at this stage to a record high. The climb to \$8.8 million for expansion stage median deal sizes represented a \$5 million increase over levels achieved as recently as 2016. Despite increasing commitments from generalist investors, the median deal for foodtech's most mature companies backed off record heights, falling by almost half from \$30 million in 2018 to \$18.6 million last year in a return to a range more consistent with figures that characterized mid-decade late-stage deal sizes. Since the start of 2010, venture investment has generated \$25 billion in aggregate funding value across 1,429 financing rounds.

As foodtech enters a new decade, the ability to sustain gains in venture activity represents perhaps its greatest challenge, although emerging companies delivering novel ingredients and alternatives to everyday proteins are only on the cusp of transforming the supply chain as we know it.



good eggs
\$141.6M
Series BB

instacart
\$1.9B
Late-stage

ezcater
\$320.0M
Series D1

E-commerce

missfresh
\$1.4B
Series E

GROFERS
\$369.5M
Series F

bigbasket
\$708.2M
Late-stage

June
\$93.5M
Series c

狸便利
\$72.6M
Early-stage

MISO ROBOTICS
\$43.1M
Early-stage

Hardware enabled

FARMER'S FRIDGE
\$59.2M
Late-stage

CAFEX
\$49.6M
Series C

care/of
\$87.5M
Series C

soylent
\$71.5M
Late-stage

Evolve BioSystems
\$70.0M
Series C

IMPOSSIBLE
\$777.0M
Late-stage

JUST
\$372.5M
Late-stage

Perfect Day
\$201.5M
Series C

DAY TWO
\$65.0M
Early-stage

SECOND GENOME
\$63.8M
Late-stage

MEMPHIS MEATS
\$183.0M
Series B

ripple
\$120.6M
Late-stage

Consumer health

Alternative protein

WISerg
\$60.0M
Series C

Supply chain

CLOUD KITCHENS
\$700.0M
Early-stage

宋小菜
\$68.5M
Series B

ninjacart
\$199.7M
Late-stage

Clear Labs
\$45.2M
Late-stage

070 innovations
\$13.3M
Late-stage

Apeel Sciences
\$110.0M
Late-stage

Processing & packaging

TIPA
\$48.8M
Late-stage

Meal kits & delivery

Novel ingredients

DOORDASH
\$2.1B
Late-stage

deliveroo
\$1.5B
Late-stage

motif FOOD SCIENCE
\$117.5M
Series A

Geltor
\$77.5M
Early-stage

Rappi
\$1.5B
Late-stage

SWIGGY
\$1.4B
Late-stage

goPuff
\$758.3M
Late-stage

Clara Foods
\$56.8M
Series B

LUMEN BIOSCIENCE
\$38.0M
Series B

FouxMatok
\$30.1M
Early-stage

Note: Data represents total raised deal value.

AgriFood tech at a glance



\$35.4B

Aggregate value of global agrifood tech VC raised over the past decade, representing \$10.4 billion in combined venture investment in agtech while foodtech generated \$25.4 billion



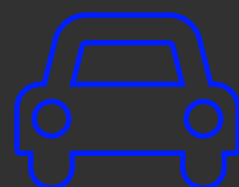
3,058

Sum of combined funding VC rounds raised across the global agrifood tech space since the start of 2010, with foodtech companies securing 1,429 investments while agtech companies completed 1,629 transactions



44.2%

Compound annual rate at which agtech venture investment has expanded over the past decade, with funding levels jumping 4x since 2015 and fueling dramatic changes across the ecosystem



\$18.6M

Global foodtech VC median deal size at the late stage in 2019, while the median early-stage deal size was \$8.8 million and the angel & seed median deal size was \$2.7 million



\$11M

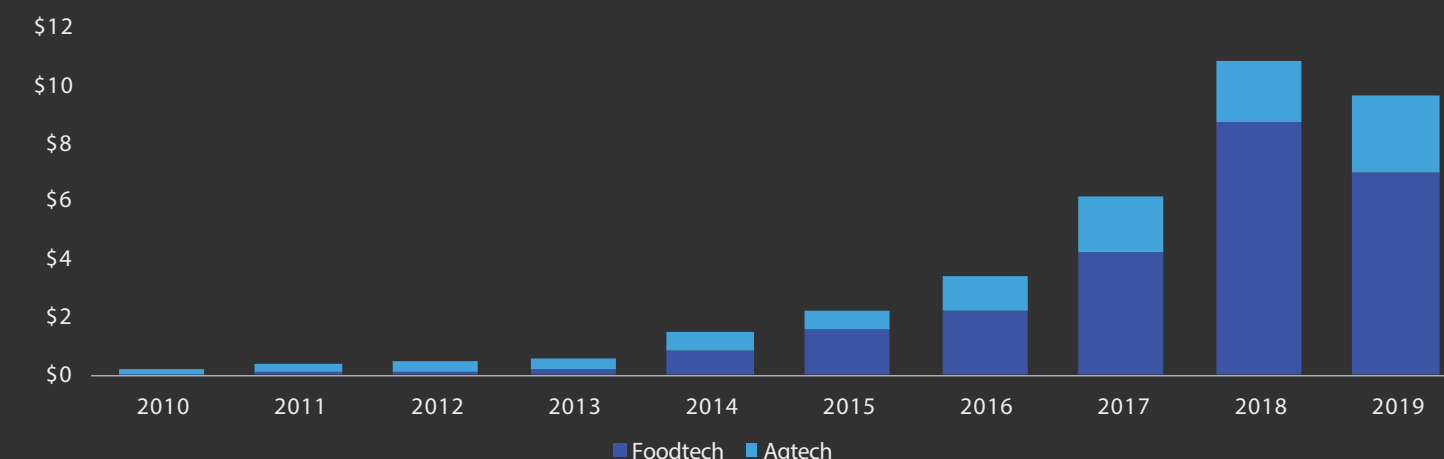
Global agtech VC median deal size at the late stage in 2019, while the median early-stage deal size was \$3.2 million and the angel & seed median deal size \$1.3 million



2.2x

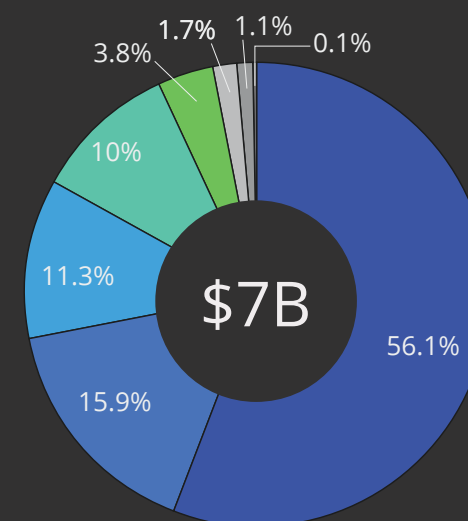
Increase in global median pre-money valuation for later-stage foodtech companies compared to agtech in 2019, an exception to the trend toward convergence around valuations registered at the early and angel & seed stages

Agrifood tech VC deal activity



Source: PitchBook | Geography: Global

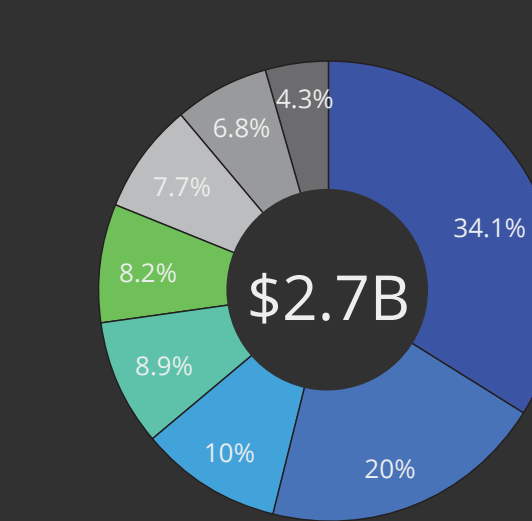
Share of 2019 foodtech VC deal value by subvertical (%)



- Meal kits & delivery
- Supply chain
- Novel ingredients
- Consumer health
- E-commerce
- Alt protein
- Hardware enabled
- Processing & packaging

Source: PitchBook | Geography: Global

Share of 2019 agtech VC deal value by subvertical (%)



- Crop protection & input mgmt
- Ag Marketplaace & fintech
- Sensors & farm equipment
- Imagery
- Indoor Ag
- Animal tech
- Plant science
- Precision ag

Source: PitchBook | Geography: Global

“The flow of capital is shifting as the market matures. While more investment dollars pour into advanced crop protection technologies, indoor farming, alternative proteins, ingredient refinement, and supply chain advances, investment in mainstays like digital ag is beginning to dry up as leaders start to emerge. Likewise, those investment booms will help drive a healthier, more sustainable food and ag ecosystem.”

Arama Kukutai
 Founding & Managing Partner, Finistere Ventures

Conclusion

As we enter a new decade, the presiding technology thesis at Finistere Ventures will continue to focus on the sustainable intensification of production, digitization of supply chains and the critical importance of sustainability and therefore new technology requirements across the agtech supply chain. We believe that, coupled with consumers' tastes shifting to more plant-based diets and healthy alternatives to processed food, we will see investors looking to capitalize on the complementary trends of convenience, virtuous brands and fresh supply chains. We anticipate structural transformations comparable to the improved efficiency and environmental focus achieved by the car industry and alt energy sector in years past. Access to capital is in broad terms no longer the constraint it was in the early years of the new millennium. The result of a combined \$35.4 billion of venture funding committed to innovation across the agrifood tech value chain since the start of 2010 will:

- Catalyze new business models and management practices worldwide
- Enable structural changes in the food and agriculture system that offset and reduce carbon emissions from agriculture
- Improve food production including waste reduction, food security, as well as affordability and farmer profitability
- Support population health equitably through dietary and nutritional improvements

However, there are lessons from the past decade in cleantech to consider as we go forward. In particular, the emerging view of agrifood tech as a leading driver of improved sustainability across the value chain does not mean that inflated valuations of novel food types or production methods are justified, and we anticipate a correction to come in the near-term consistent with the type of shakeouts that occur in overheated venture-backed categories.

Moreover, as a consequence of its greater dependence on stable supply chains facilitating export flows, foodtech, particularly in Asia, has proven more susceptible to forms of macro-level disruption over the past year that will affect markets for the foreseeable future. However, these developments, insofar as they encourage the re-nearing of the food supply across developed markets, may well spur the consolidation of processing & packaging companies along lines complementary to improved food security, better sustainability footprints and acceleration of new business models.

In anticipation of these changes, sovereign wealth groups, some in just the latter half of 2019, have expanded their interest in the agrifood tech space alongside the YoY expansion in the participation of private equity groups. Going forward, these investors will add heft and weight to the growth of agrifood tech's sustainability proposition in the market. Many of these funds, including a growing number of family offices, have rapidly embraced environmental sustainability as a top priority and a driver of future returns. This increased interest in impact investment theses across an increasingly diverse set of both specialist and generalist funds in the last year suggests that venture activity in agtech and foodtech will continue to intensify.

A number of prominent firms have already made efforts to improve not only the efficacy of their ESG and sustainability screens, but also how their investment portfolios impact, and are impacted, by climate change. Among the most prominent examples of the complementary scope of investment and stewardship is that of Syngenta and The Nature Conservancy, and new firms like Breakthrough Energy Ventures with a focus on reduction in GHG CO2e as a primary investment goal.

Consumers across the developed world have encouraged investment to grow at an astonishing pace in several areas of agrifood that complement the growing demand for sustainable sourcing to reduce carbon emissions. The growth of the alt protein space, in particular, provides a case study par excellence in this thesis at work. The CAGR on investment activity in animal alternatives over the past decade represented an uptick of some 45.4% in completed financing rounds, contributing to a compound annual expansion of 90.7% in aggregate value over the same period as venture investment climbed to \$699.2 million across 40 financings in 2019. Meanwhile, the United Nations Food and Agriculture Organization estimates that the CAGR over the past decade for global beef consumption was just 0.11%. Added to this is the recognition that the product profile under development tackles much more than beef, with startups and incumbents tackling dairy, seafood, pork and chicken, the most widely consumed meat in the US.

As we move into the new decade, a focus on agtech and foodtech as paths to climate impact mitigation will increasingly become the driver for investment trends that will not only reimagine the future of farming and food, but the very future of our planet as a whole.

Appendix

Top VC deals in agtech in 2019

Company name	Close date	Deal size (\$M)	Company vertical	Investment round	Pre-money valuation (\$M)
Ginkgo Bioworks	September 19, 2019	\$290.0	Crop protection & input mgmt	Series E	\$4,500.0
Farmers Business Network	January 1, 2019	\$175.0	Ag marketplace & fintech	Series E	\$900.0
Infarm	June 11, 2019	\$100.0	Indoor ag	Series B	\$333.9
AeroFarms	July 9, 2019	\$100.0	Indoor ag	Series E	\$400.0
GreenLight Biosciences	January 8, 2019	\$88.8	Crop protection & input mgmt	Series C	\$100.0
Bowery Farming	October 21, 2019	\$50.0	Indoor ag	Series B1	\$450.0
DroneDeploy	October 18, 2019	\$35.0	Imagery	Series D	\$200.0
Benson Hill Biosystems	May 31, 2019	\$32.6	Plant science	Series C	\$265.0
Soft Robotics	December 3, 2019	\$25.0	Sensors & smart farm equipment	Series B	\$90.0

Source: PitchBook | Geography: Global

Top VC deals in foodtech in 2019

Company name	Close date	Deal size (\$M)	Company vertical	Investment round	Pre-money valuation (\$M)
Rappi	April 30, 2019	\$1,000.0	Meal kits & delivery	Late-stage	\$2,500.0
GoPuff	August 1, 2019	\$750.0	Meal kits & delivery	Late-stage	--
DoorDash	November 13, 2019	\$700.0	Meal kits & delivery	Series G	\$12,300.0
CloudKitchens	January 1, 2019	\$400.0	Supply chain	Early-stage	\$4,600.0
DoorDash	February 21, 2019	\$400.0	Meal kits & delivery	Series F	\$6,700.0
Impossible Foods	May 13, 2019	\$300.0	Alternative protein	Series E1	\$1,700.0
Picnic	November 27, 2019	\$276.7	Meal kits & delivery	Late-stage	--
Benlai Life	October 8, 2019	\$200.0	E-commerce	Series D	--
Glovo	April 30, 2019	\$168.4	Meal kits & delivery	Series D	--

Source: PitchBook | Geography: Global



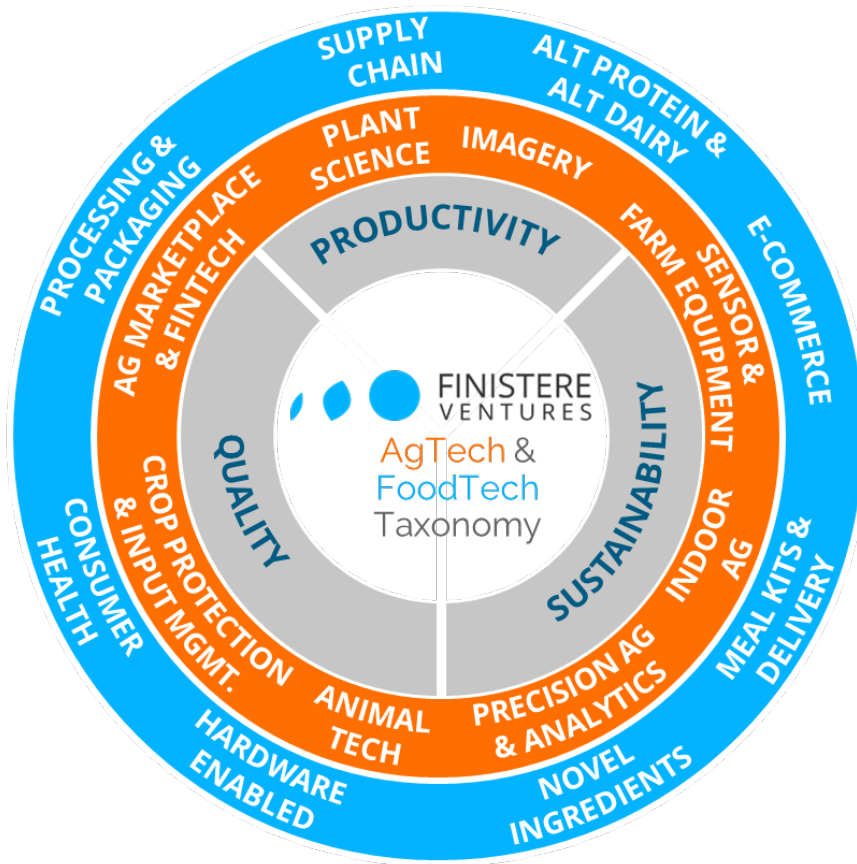
Arama Kukutai
SAN DIEGO

Spencer Maughan
SILICON VALLEY



**FINISTERE
VENTURES**

Finistere is a California-based VC with a global outlook. Since 2006 we've been the leading venture investor re-engineering the food value chain



Building a portfolio spanning the AgriFoodTech Taxonomy



Integrated

Genetics

Data-driven Technology & AI Platforms

Consumer