PitchBook

EMERGING TECH RESEARCH

Agtech

Q2 2020

Report preview

The full report is available through the PitchBook Platform
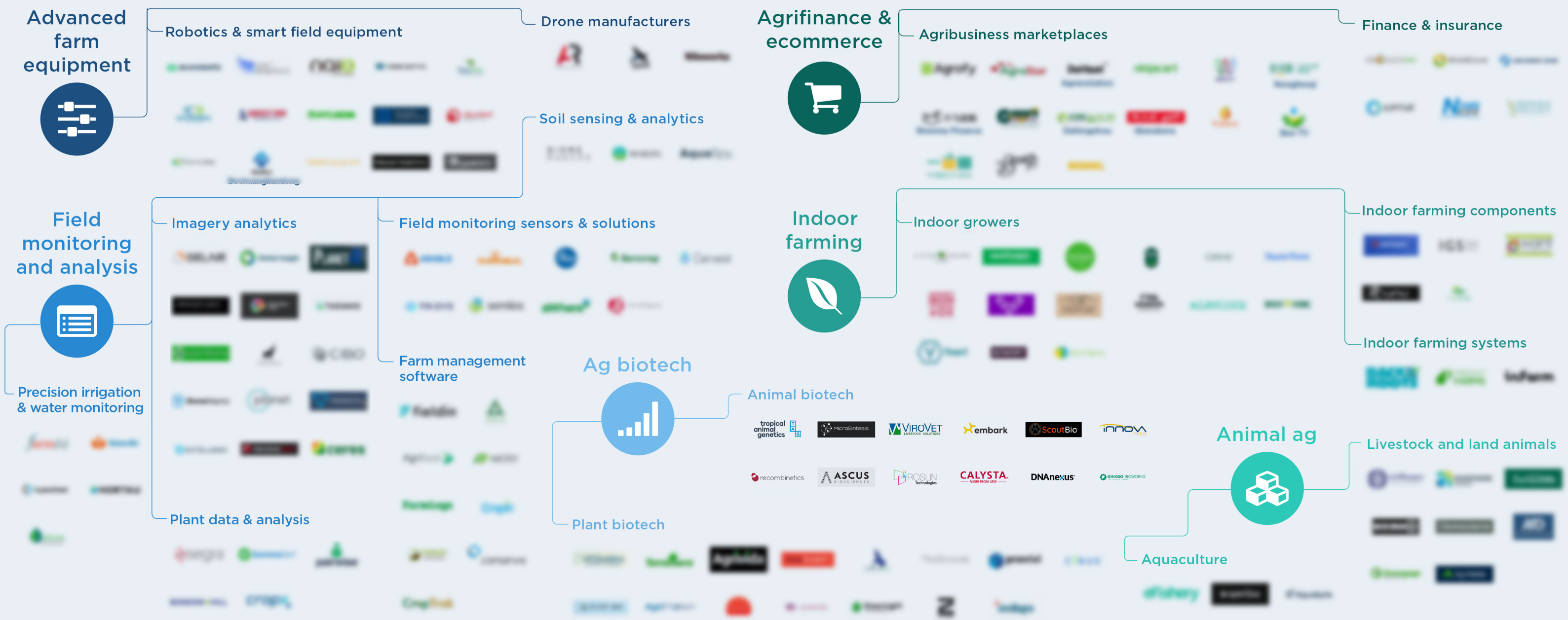
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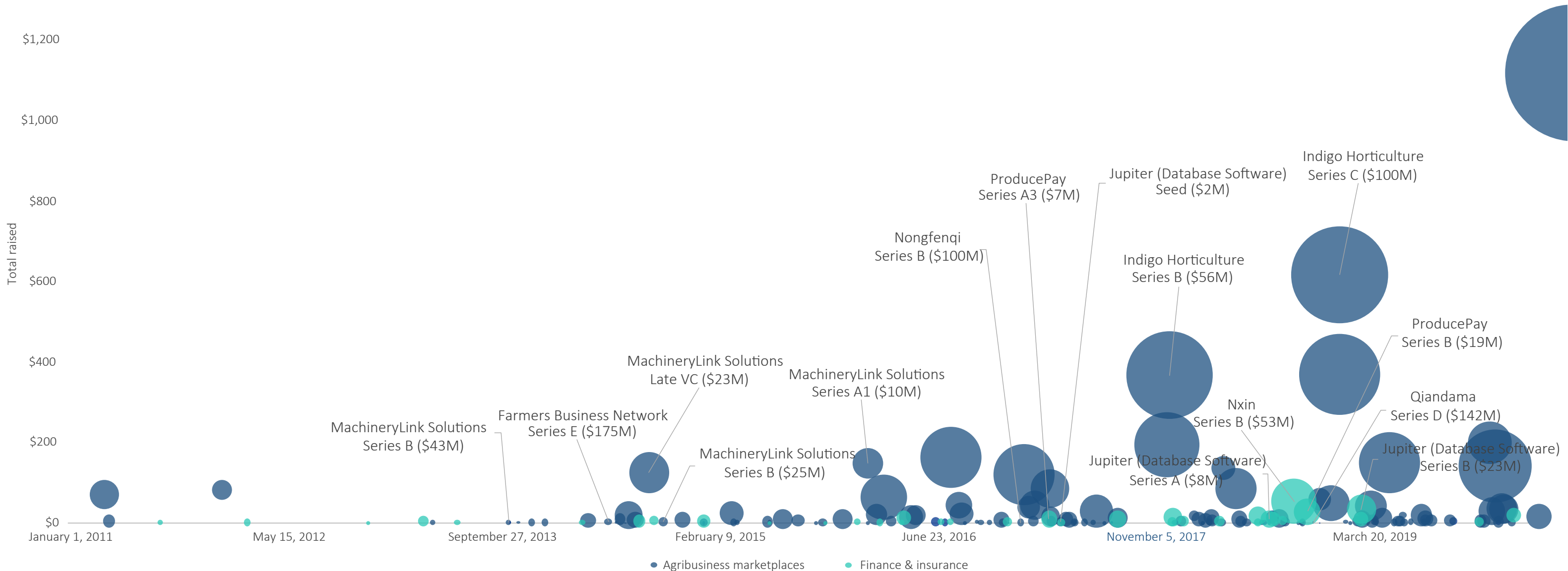
Agtech VC ecosystem market map

We have segmented the industry primarily by the end-market use case. The accompanying market maps contain VC-backed startups that have achieved significant funding and traction in the respective categories. Although some startups could fit into multiple categories, we have segmented them into the categories that best match our assessment of their primary use case.

Advanced farm equipment

Robotics & smart field equipment

Drone manufacturers

Soil sensing & analytics

Field monitoring and analysis

Imagery analytics

Field monitoring sensors & solutions

Farm management software

Precision irrigation & water monitoring

Plant data & analysis

Ag biotech

Animal biotech

tropical animal genetics · MicroSintesis · VIROVET LIVESTOCK SOLUTIONS · embark · ScoutBio · INNOVA FEED

recombinetics · ASCUS BIOSCIENCES · ROSLIN Technologies · CALYSTA MORE FROM LESS · DNAnexus · GINKGO BIOWORKS

Plant biotech

Agrifinance & ecommerce

Agribusiness marketplaces

Finance & insurance

Indoor farming

Indoor growers

Indoor farming components

Indoor farming systems

Animal ag

Livestock and land animals

Aquaculture

Figure 6.
Agrifinance VC landscape ($M)

Source: PitchBook

Note: The left axis indicates total VC raised as of deal date. Bubbles indicate amount raised.

Opportunities

Plant biotech: Companies operating in plant biotechnology develop biological or chemical products, including custom plants, organisms, fertilizers, and other transgenic inputs. Plant biotechnology aims to improve resiliency, yield, and nutrition qualities of crops. Benefits include increased productivity per acre, enhanced environmental practices (for example, a reduction in fertilizer usage), improved nutrition, and a reduction in crop losses from extreme weather, pests, and disease. Drivers of plant biotech innovation include population growth and demand for organic and sustainable produce, which is motivating growers to produce commercially viable crops without the use of toxic herbicides or pesticides. While some providers focus on singular solutions, others utilize multi-input solutions (that is, combined GMO seed and herbicide) or take a platform approach. For example, **Boost Biomes** uses a proprietary discovery platform to research and develop multi-microbial products for ag applications. **Pivot Bio** is developing self-fertilizing cereal crops to reduce or eliminate the need for synthetic nitrogen fertilizer and the accompanying environmental impacts. Leaders in plant biotech include **Pivot Bio**, **Benson Hill**, and **CoolPlanet**.

Animal biotech: Animal biotech companies are motivated by the same primary objectives as plant biotech: optimizing health, production, and other characteristics (such as nutrition) in animals. Technologies and solutions within the category include breeding, animal health, genetics (genetic engineering, genetic modification, and cloning), breeding, and feed (feed additives and feedstuffs). CRISPR-Cas9 is one emerging technology for

which providers are developing animal ag solutions. As with plant biotech, one benefit of animal biotech is reduced dependence on undesirable inputs and activities in modern industrial agriculture, such as antibiotics. **Phage Technologies** is developing animal ag treatments that combat bacteria in intensive animal rearing processes, reducing the need for antibiotics in most cases. Leaders in animal biotech include **Calysta**, **Roslin Technologies**, and **Recombinetics**.

Considerations

Environmental concerns: Critics of ag biotech take issue with its potential negative impacts. Improper use of fertilizers or potent insecticides and herbicides could leak into bodies of water, killing plants and animals. These new technologies bring rational fears of unknown consequences, such as the creation of super viruses or genetically modified animals that are more susceptible to disease.

Food safety concern: In market-oriented economic systems such as the US, consumers are the ultimate arbiters of the food supply. Many consumers have become concerned with the health impacts of consuming GMO produce, GMO-fed animals, and food products. Concerns primarily include possible allergenicity and toxicity. As such, many countries have passed laws regulating where GMOs can be sold and for what purposes. Ag biotech in animals is a cause for concern for many critics, as well. The use of antibiotics in animal production is attributed to antibiotic resistance in humans. Providers need to factor in consumer perceptions when considering biotech inputs with food product use cases.

Overview

Field monitoring & analysis technologies, collectively referred to as "precision agriculture," provide software and sensors to monitor, analyze, predict, and optimize in-field elements including crops, water, weather, and pests. Startups in this sector offer hardware sensors designed to collect specific farm data such as weather, moisture, and plant health. Other providers in the space develop software that can interpret data and improve decision making.

Growers have long been a critical market for field monitoring & analysis companies promising significant benefits through data collection. However, the promises of meaningful improvements through data collection have largely fallen short because growers have lacked sufficient tools to interpret and act on the data. This has led to a significant level of technology fatigue and resistance to new technologies. However, with data collection infrastructure well advanced, emerging AI & ML and predictive analytics technologies are poised to complete the loop by improving decision-making capabilities and offering meaningful recommendations based on data trends and analysis.

Industry drivers

Advances in AI and IoT technology: AI is becoming easier to use, and IoT sensors are getting cheaper, smaller and quicker.

Increasing global food demand: Population growth pressures growers to increase farm productivity. Limited arable land means that growers need to increase crop yields on existing acreage.

Field monitoring and analysis

Precision irrigation & water monitoring

Imagery analytics

Plant data & analysis

Soil sensing & analytics

Field monitoring sensors & solutions

Farm management software

FIELD MONITORING & ANALYSIS

Notable field monitoring & analysis VC deals

COMPANY	CLOSE DATE	SUBSEGMENT	DEAL SIZE ($M)	POST-MONEY VALUATION ($M)*	DEAL TYPE	LEAD INVESTOR(S)	VALUATION STEP-UP
TARANIS	May 14, 2020	Imagery analytics	$30.0	N/A	Series C	K3 Ventures, Vertex Growth	N/A
CIBO	May 5, 2020	Imagery analytics	$10.0	$157.4	Series B	N/A	1.00x
farm(x)	April 21, 2020	Precision irrigation & water monitoring	$8.8	N/A	Late-stage VC	N/A	N/A
cloud agronomics	June 22, 2020	Imagery analytics	$4.7	N/A	Early-stage VC	N/A	N/A
aturas	May 27, 2020	Precision irrigation & water monitoring	$3.0	N/A	Series B	N/A	N/A

Source: PitchBook | Geography: Global | *As of June 30, 2020

Notable field monitoring & analysis VC exits

COMPANY	CLOSE DATE	SUBSEGMENT	EXIT SIZE ($M)	POST-MONEY VALUATION ($M)*	EXIT TYPE	ACQUIRERS(S)	VALUATION STEP-UP
10X GENOMICS	September 12, 2019	Plant data & analysis	$3,270.1	$3,660.1	IPO	NASDAQ	2.55x
GROWERS	February 19, 2020	Farm management software	$27.5	$27.5	M&A	Israel Chemicals	N/A
LemnaTec	August 12, 2019	Plant data & analysis	N/A	N/A	M&A	Nynomic	N/A
FARM AT HAND	August 13, 2019	Farm management software	N/A	N/A	M&A	Telus	N/A
HANGAR	September 23, 2019	Imagery analytics	N/A	N/A	M&A	AirMap	N/A

Source: PitchBook | Geography: Global | *As of June 30, 2020

INDOOR FARMING

Indoor farming systems: Complete growing environments that span from small consumer table-top solutions to massive commercial facilities. Most solutions are turnkey, allowing customers to step in and begin operations.

Indoor farming growers: Operators of indoor farming facilities. Many growers build out proprietary components and systems to reduce costs and increase yields.

Industry drivers

Consumers are prioritizing food traceability and local foods: Similar to organic produce, consumers are paying a premium for locally sourced foods. Indoor farming allows for local production of crops that would otherwise be inaccessible due to lack of arable land (for example. in an urban environment) or climate (for example, fresh tomatoes in winter).

Improving the quality and yield of high-profit plants: One of the most considerable benefits of indoor agriculture is the ability to control virtually every factor affecting growth, such as light, temperature, and nutrients. This allows growers to decrease production times and improve desirable plant traits. For example, cannabis can be manipulated in a controlled indoor environment to provide a highly profitable yield.

Climate change driving pursuit of sustainable farming practices: According to the World Economic Forum, food systems are responsible for 20%-30% of greenhouse gas emissions, account for 70% of freshwater withdrawals, consume about 30% of the world's available energy, and is the most significant driver of deforestation.[11] Climate change is diminishing crop yields and the availability of water and arable land. Indoor farming promises significant sustainability gains on water consumption, arable land requirements, and fossil fuel emissions.

11: Ibid.

Figure 30. **INDOOR FARMING MARKET SIZE ($B)**
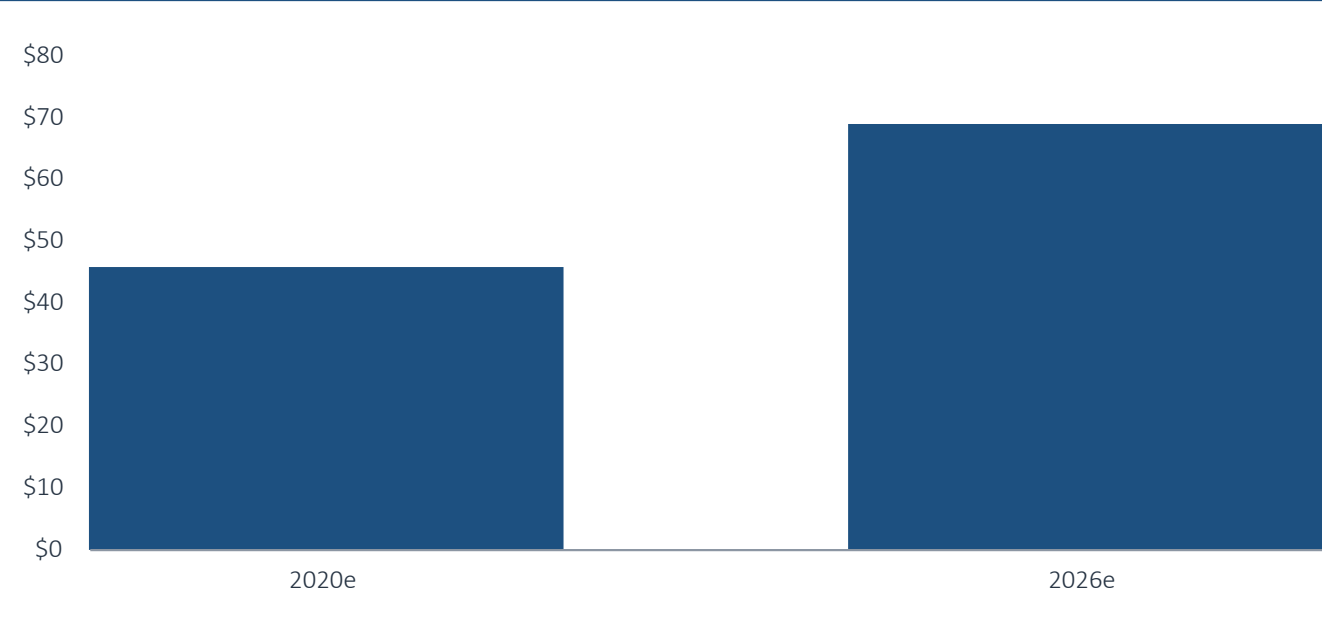
Source: Global Industry Analysts, BIS Research, Knowledge Sourcing Intelligence, Stratistics Market Research Consulting, and PitchBook

COMMON INDUSTRY KPIS FOR INDOOR FARMING COMPANIES

Hardware
- Power budget (active battery time)
- Form factor (size)
- Memory (RAM)
- Connectivity range

Software
- Number of APIs
- Financial
- Gross margins
- Customer acquisition cost (CAC)
- Customer lifetime value (CLV)

Select company analysis

°indigo

Business overview

Indigo Agriculture is an ag biotech and agrifinance startup. The company started off developing seed treatments containing microbes to improve crop performance and resilience. **Indigo Agriculture** expanded to offer an ecommerce marketplace to connect growers with crop buyers. The company's latest business line is a carbon sequestration program that incentivizes growers to shift to regenerative farming practices and creates a carbon credit marketplace from the sequestered greenhouse gases.

We believe **Indigo Agriculture**'s business lines, although disparate, touch on growing trends of improving crop resiliency, de-commoditizing crops, and reversing climate

Leadership

CEO, President, Board Member: David Perry

COO, International: Karsten Neuffer

COO, North America: Rachel Raymond
Co-founder, CIO,

Board Member: Geoffrey von Maltzahn, PhD

Competitors

AgBiome, **Agrinos**, **BioConsortia**, **ZeaKal**, Syngenta

Ownership

FedEx, Riverstone Holdings, Saltwater Capital, Lian Group, Starport Capital Management, among others.

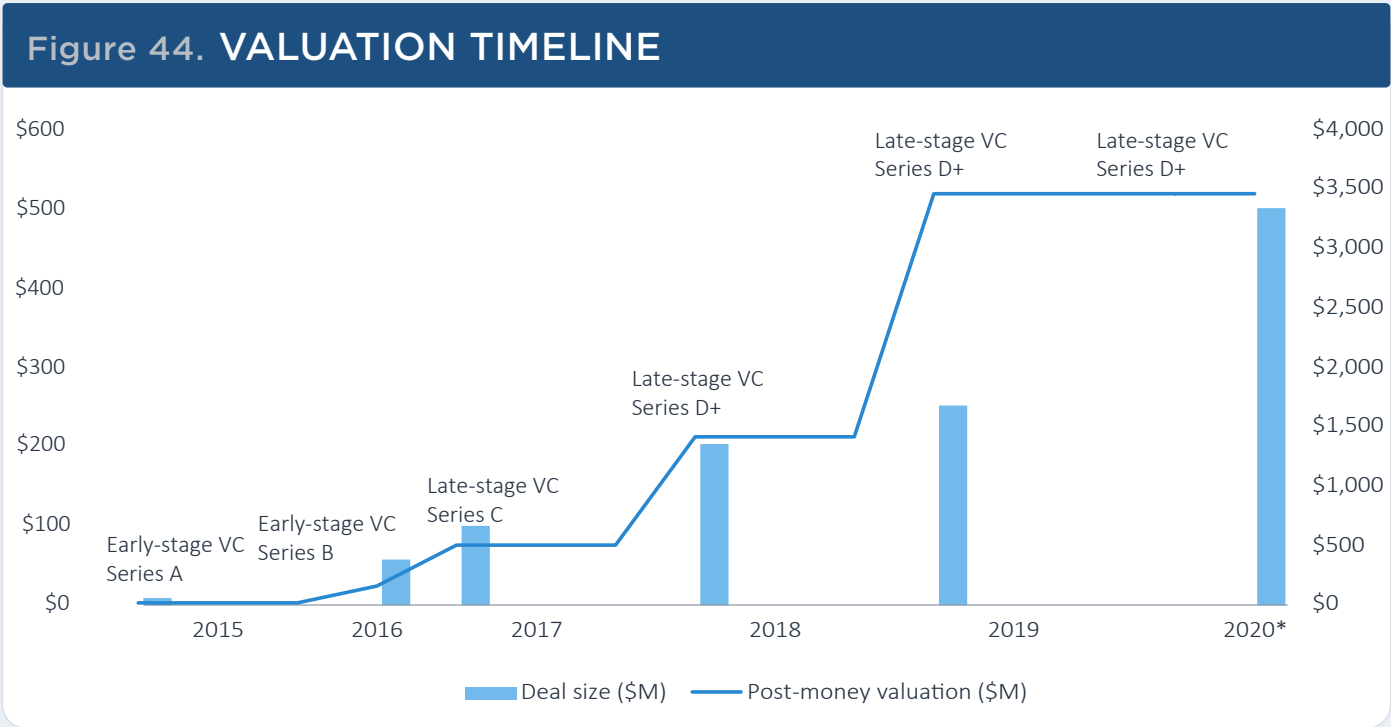### Financing history

Raised-to-date: $1.1 billion over eight rounds

Most recent round: $500 million Series F (June 2020)

Last valued at $3.5 billion post-money (December 2018)

First institutional round: $7.5 million Series A (November 2014)

Figure 44. VALUATION TIMELINE

Source: PitchBook | Geography: Global | *As of June 30, 2020

Figure 54.

Median agtech VC deal size ($M) by stage

Source: PitchBook | Geography: Global | *As of June 30, 2020
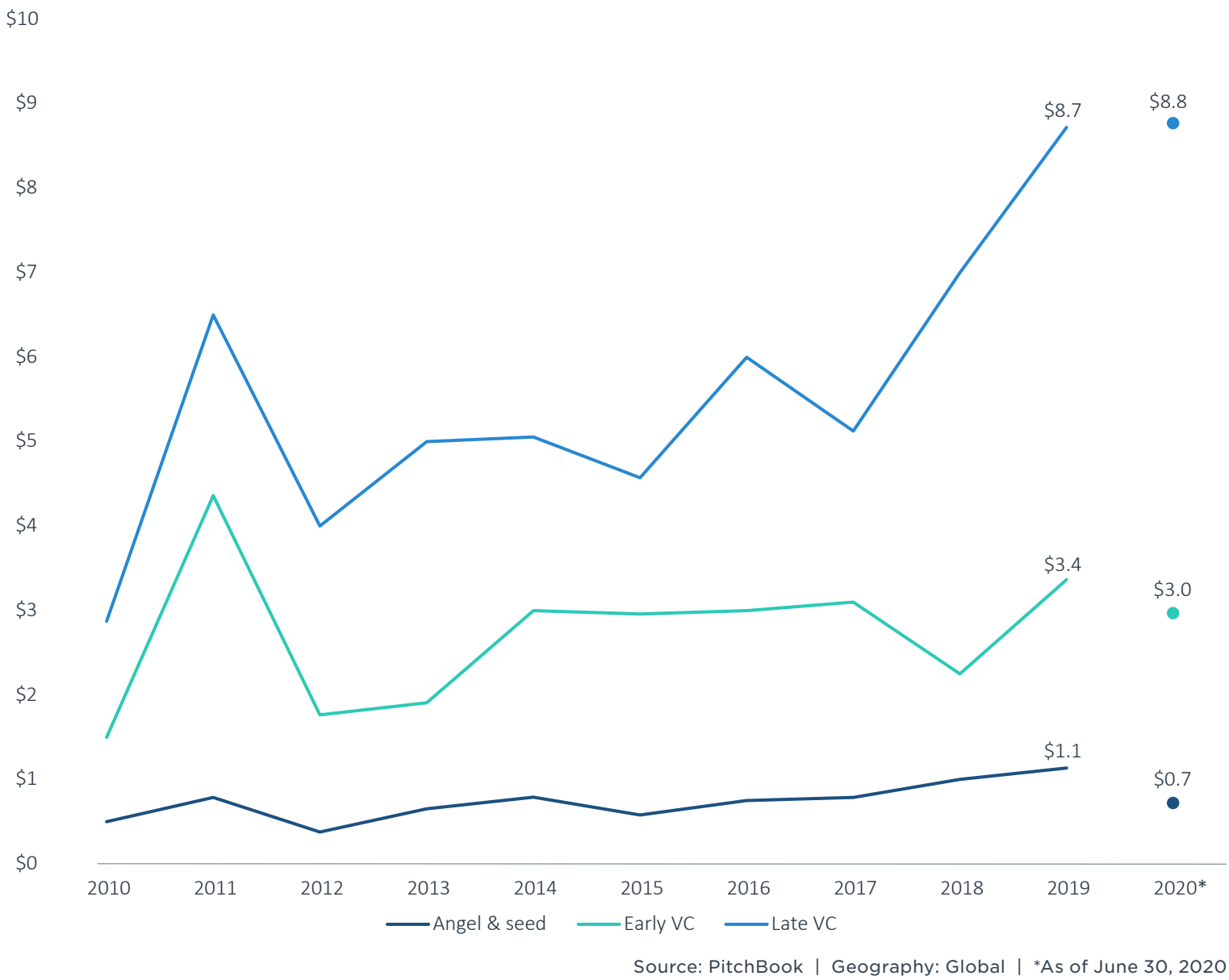
Figure 55.

Median agtech VC pre-money valuation ($M) by stage

Source: PitchBook | Geography: Global | *As of June 30, 2020
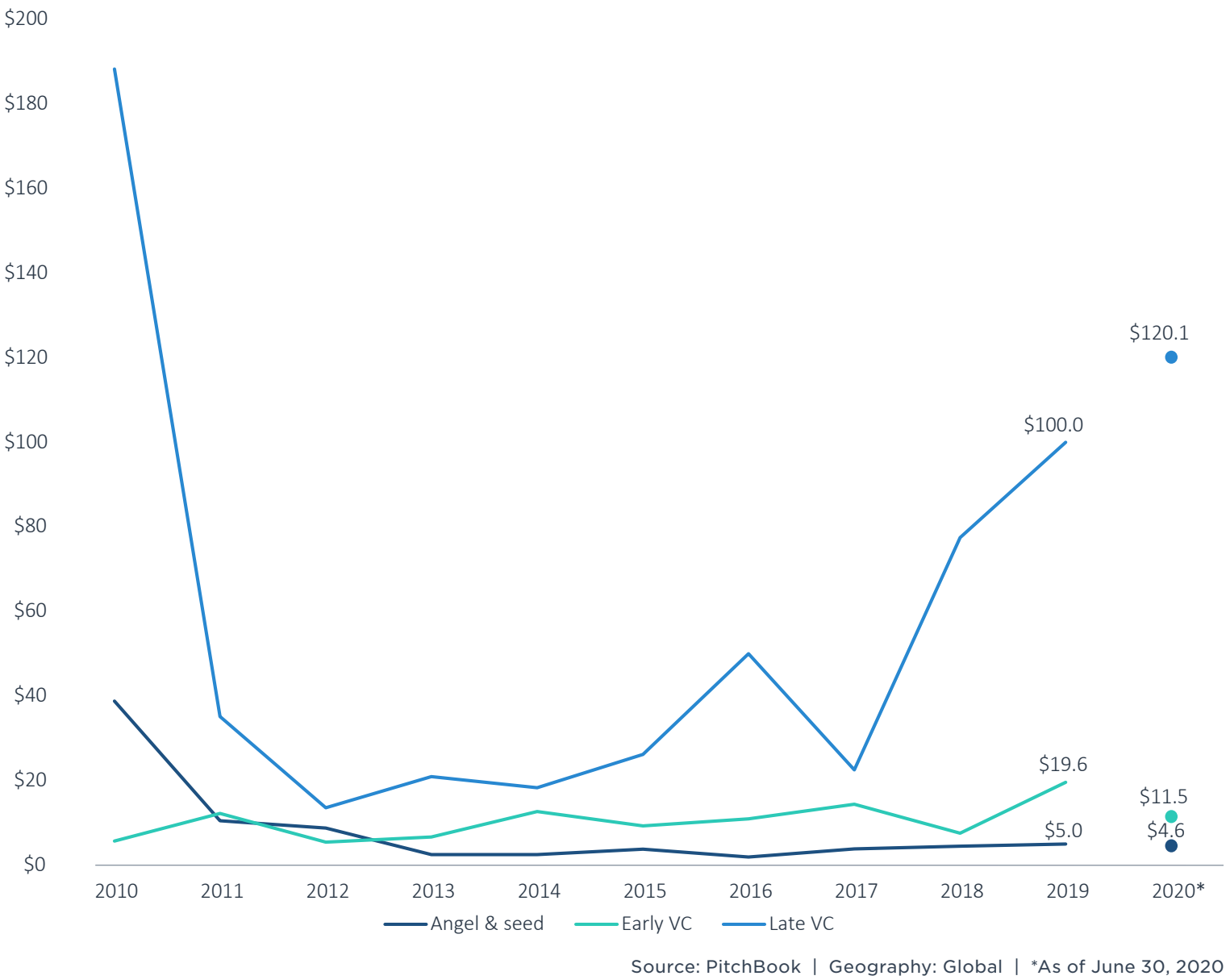
About PitchBook Emerging Tech Research

Independent, objective and timely market intel

As the private markets continue to grow in complexity and competition, it's essential for investors to understand the industries, sectors and companies driving the asset class.

Our Emerging Tech Research provides detailed analysis of nascent tech sectors so you can better navigate the changing markets you operate in—and pursue new opportunities with confidence.

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