AGRINOVUS VELOCITY ACCELERATOR 2026:
INNOVATION CHALLENGE RESEARCH REPORT



ADVANCING INNOVATION:

Priority Areas for Indiana's Agbioscience Future

Arrowpoint Labs

AGRINOVUS
Velocity

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Foreword from AgriNovus Indiana

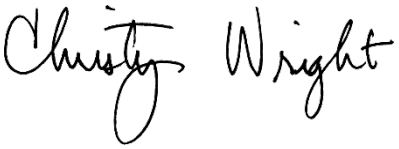
AgriNovus Indiana's strategic framework, Accelerate 2050, identifies three critical areas of focus poised to shape the future of the agbioscience economy: bioinnovation, farmer-focused innovation and food is health. Challenges persist across the value chain, whether it be operational costs on the farm, environmental and regulatory pressures and a growing desire from consumers to better align food with health, among others.

Where challenges arise, so too, do opportunities for students, startups and existing companies to innovate and meet the moment with Velocity – a six-month accelerator designed to create solutions to defined challenges across these three areas of focus. Built from the original AgriNovus Innovation Challenge Series and in its second year, Velocity enables the acceleration of new technologies and awards a $25,000 prize to the top solution in each focus area.

This study is a collection of research, data and insights from industry leaders to provide guidance on solutions that will drive our agbioscience economy forward. Translating our most critical challenges into actionable insights creates a path for innovation to be discovered, developed and delivered at scale.

Let it serve as your call to action, whether you're an innovator preparing to apply for Velocity or an industry leader looking for better ways to connect with the startup ecosystem. The future of our agbioscience economy may be shaped by these three critical areas; but it will be defined by the innovators that are willing to solve the industry's toughest challenges. Let the work begin now.

Best,



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Executive Summary

- Indiana's agbioscience sector comprises over 5,400 establishments employing more than **105,000 Hoosiers** (plus another 47,000 farm proprietors) and generating **$82.3 billion** in direct economic activity. The sector spans five innovation platforms: value-added food and nutrition, agricultural production, plant science and crop protection, animal health and nutrition, and, agricultural technology and equipment (agtech). Each platform must innovate to meet technology, policy, and macroeconomic shifts that are already substantially changing how food is grown, processed, and consumed.
- This report synthesizes insights from key Indiana and national agbioscience stakeholders to inform the 2026 Velocity Accelerator's three strategic focus areas: **Farmer-Focused Innovation**, which addresses operational efficiency, data fragmentation, and labor challenges; **Food is Health**, which advances food's role as a driver of healthcare outcomes; and **BioInnovation**, which leverages biotechnology for bio-based solutions in seed, crop protection, and beyond.
- Stakeholder interviews and an augmented AI-assisted review of public company reports reveal that **challenges across these focus areas are deeply interconnected**. Farmers need integrated data platforms that also generate the evidence healthcare payers require for food-as-medicine investments. Gene editing and fermentation technologies originating in BioInnovation can simultaneously address farm productivity and consumer demand for healthier, more sustainable or efficacious products. Successful innovations will increasingly bridge these boundaries.
- Based on this research, the report poses problem statements for each focus area. These statements include themes such as farm data science, manufacturing and bioscience; and they seek to address issues ranging from operational efficiency to regulatory compliance and waste mitigation. Each is grounded in Indiana's demonstrated strengths and competitive positioning.

Introduction and Context

Indiana's agbioscience sector is a central pillar of the state's economy and plays a critical role in enabling domestic and global food security. The sector, which spans food manufacturing, agricultural production, plant science, animal health, and agtech, employs over 152,000 Hoosiers and generates $82.3 billion in economic activity. Indiana has demonstrated sustained national leadership in the agbioscience economy; the state ranks among the top five nationally in corn and soybean production, poultry (duck, eggs, turkeys), specialty crops (popcorn, pumpkin, tomatoes, spearmint, peppermint), ethanol manufacturing, and grain processing. It is also home to the global headquarters of several industry leaders including Elanco, Corteva Agriscience and Beck's Hybrids. At the same time, the agbioscience landscape is rapidly changing due to a confluence of technology, policy, and other macroeconomic changes. These shifts will substantially change the way that food is grown, processed, and consumed. Indiana must continue to accelerate innovation across its agbioscience platforms to capture the economic opportunity of the moment and strengthen its position as the nation's agbioscience leader.

AgriNovus' Velocity Accelerator aims to identify and support innovators who are advancing technologies to address defined trends in the agbiosciences. In its second year, Velocity enables participants to develop technology-enabled solutions addressing Indiana's three strategic priority areas: Farmer-Focused Innovation, Food is Health, and BioInnovation. Past Velocity participants have gone on to raise millions in follow-on funding, scale their technologies across thousands of acres, and build partnerships with anchor companies and research institutions. The 2026 Velocity program will award $75,000 ($25,000 per category) to innovations that demonstrate significant potential to strengthen Indiana's agbioscience economy while addressing challenges that span the value chain.

The Velocity Accelerator spans three focus areas:

Focus Area	Overview	Example Innovations
Farmer-Focused Innovation	Innovation that enhances operational efficiency, reduces administrative burden, and /or otherwise enhances productivity for Indiana's farmers and farm-based businesses	> Decentralized real-time data collection platforms > Human-out-of-the-loop automation technologies for complex farm tasks
Food is Health	Innovation that advances the foundational role of food as a core driver of healthcare outcomes and economic productivity, including technologies at the intersection of human, animal, plant, and environmental health	> Cross-species microbiome optimization platforms > Personalized nutrition delivery and intelligence systems
BioInnovation	Innovation that leverages biotechnology processes, platforms, or tools to unlock bio-based solutions to existing agbiosciences use cases, including tools in seed and crop protection	> Precision fermentation for food ingredients or intermediates > Rapid microbial strain engineering

This report provides a brief overview of the agbioscience sector's impact in Indiana, synthesizes insights from key state and national agbioscience leaders, and provides problem statements for the 2026 Velocity Accelerator.

Indiana's Agbioscience Footprint

Indiana is home to a nationally leading agbioscience cluster, though its impact varies by innovation platform. Figures relating to employment, total number of firms, total wage, and localization quotient are drawn from the Central Indiana Corporate Partnership Advanced Industry Dashboard and are summarized **in Table 1** below.

Table 1: Economic impact metrics in Indiana for defined agbiosciences innovation platforms

Platform	GDP Contribution (2024)	Establishments (2024)	Employment (2024)	Average Wage (2024)
Ag Equipment, Technologies & Systems	$0.9B	404	5,670	$89,920
Ag Production, Distribution & Processing[1]	$9.1B	2,182	21,301	$68,640
Animal Health and Nutrition[2]	$1.0B	227	3,392	$99,814
Plant Science and Crop Protection[3]	$1.9B	686	9,057	$82,403
Value-Added Food and Nutrition	$9.4B	1,956	65,660	$73,214
Total	**$ 22.4B**	**5,455**	**105,079**	**$74,839**

1. Agricultural production figures do not account for the estimated 47,000 farm proprietors in Indiana. Adding these Hoosiers results in more than 152,000 working in the agbiosciences.
2. Many animal health and nutrition companies fall within the pharmaceutical industry. A small percentage of the pharmaceutical industry was used to estimate the size of Indiana's animal health and nutrition subcluster. This estimate almost certainly results in an understatement of the size and impact of animal health and nutrition.
3. Industry data classification results in some plant science and crop protection companies appearing in data associated with agricultural production. As a result, the plant science and crop protection subcluster is likely understated.

Indiana's agbioscience sector comprises 5,455 establishments employing 152,000 workers who contribute $22.4 billion to state GDP. The largest platform by employment is Value-Added Food and Nutrition, which accounts for nearly two-thirds of the sector's workforce with 65,660 employees across 1,956 establishments, contributing $9.4 billion to GDP. Agricultural Production, Distribution and Processing represents the second-largest platform with 21,301 workers across 2,182 establishments and $9.1 billion in GDP contribution. Plant Science and Crop Protection; Agricultural Equipment, Technologies and Systems; and Animal Health and Nutrition employ 9,057, 5,670, and 3,392 workers respectively.

All platforms have average wages above the Indiana state average of $69,477 in 2023. Animal Health and Nutrition commands the highest average wages at $99,814, reflecting the concentration of specialized talent anchored by companies like Elanco. Agricultural Equipment, Technologies and Systems follows at $89,920. Plant Science and Crop Protection; Value-Added Food and Nutrition; and Agricultural Production, Distribution and Processing offer average wages of $82,403, $73,214, and $68,640 respectively.

Insights from Indiana and National Stakeholders

Indiana stakeholder priorities

Methodology

Priorities among Indiana stakeholders were determined through a series of directed interviews. AgriNovus identified key stakeholders, on both statewide and national levels, to gain insights into the critical challenges that exist within the three Velocity focus areas: Farmer-Focused Innovation, Food is Health, and BioInnovation. Interviews were done with various stakeholders, including farmer cooperatives, agricultural companies, venture studios, farm membership organizations, state government departments, and more.

Farmer-Focused Innovation

Modern farming operations require full-stack data engines and presently lack insight & interoperability: Modern farming operations generate approximately 500,000 data points daily, a volume expected to increase 800 percent by 2036. Farmers presently lack integrated platforms to consolidate this information into actionable decision support. Current tools focus on data collection and visualization rather than delivering predictive insights that improve decision quality. Farmers currently translate between multiple incompatible systems spanning equipment telemetry, agronomic inputs, pest monitoring, grain marketing, weather forecasting, and compliance. Administrative burden from fragmented data systems causes nearly one-third of farmers to forego valuable conservation incentive programs due to paperwork complexity, representing significant lost value.

In an interview with a venture studio focused on the agbioscience cluster, data interoperability was identified as a critical operational challenge. Farmers are frustrated with outdated software systems and cannot migrate decades of operational data into modern analytical tools that could inform technology adoption decisions and operational improvements. The organization emphasized that farmers need consolidated access to operational data with outputs accepted by multiple stakeholders including regulators, agronomists, and buyers.

Small and mid-size farms are struggling to navigate complex points-based EPA rules: The Environmental Protection Agency's new points-based pesticide compliance system creates immediate operational challenges requiring farmers to calculate points earned versus points required by field and chemical application. The system's complexity, spread across disparate pages on the EPA website, is emblematic of broader regulatory navigation challenges that take time away from strategic farm management decisions. Restricted chemistry access has led to increased tillage practices, potential yield reduction, and food inflation pressure. This specific pain point represents the broader challenge of farmers facing increasing regulatory complexity without corresponding tools to navigate requirements.

Multiple stakeholders identified regulatory compliance burden as a high-impact operational challenge. A state government agency noted that regulatory navigation challenges span federal and state requirements, with the department itself facing funding constraints that limit its ability to provide farmer support. The challenge exemplifies the need for compliance automation and regulatory navigation platforms reducing time burden while ensuring farmers maintain chemistry access essential for productivity.

Farms must adapt to critical labor shortages through new technology and processes: Workforce shortages are driving wages upward and making labor simultaneously scarce and expensive. While H-2A visa programs provide some relief, they impose cumbersome administrative processes. Further, the average age of farm operators continues increasing as retirements accelerate. Technology adoption is not a "quick fix"; it requires skilled workers who are even harder to recruit, particularly as farming

equipment and management systems become increasingly sophisticated and digitized.

A state government agency focused on agriculture identified labor management as the top operational challenge facing state agriculture, citing examples like watermelon growers hiring hundreds of H-2A workers annually at an extremely high cost. The organization noted interest in AI-enabled robotic harvesting systems that are under development. Most stakeholders emphasized technology-driven, rather than administrative, solutions to this challenge; including focus on robotics, autonomous equipment, and artificial intelligence systems that augment or replace labor.

Farmers require a high ROI on new technology and have frequently been disappointed by the promise of prior innovations: Farmers require a three-to-one return on investment[1] to adopt new agricultural technology, yet high upfront costs in commodity-based economics under margin pressure create significant adoption barriers compounded by uncertain returns. Farmers' inability to model technology costs and benefits using their own operational data makes the required ROI threshold difficult to assess, contributing to conservative technology adoption patterns. Only 28 percent of North American farmers plan precision agriculture adoption within the next two years.[2] A decade of broken promises from biological and precision agriculture products has created farmer skepticism and "long memories" of underperforming technologies.

An agbioscience-focused venture studio emphasized that distribution strategy and go-to-market execution outweigh product quality in determining farmer adoption success. Indiana's agricultural retail distribution network—anchored by cooperatives and independent retailers—and complemented by influential grower organizations such as Indiana Farm Bureau and commodity groups, provides unique market access that startups frequently underestimate. The organization noted that companies securing partnerships with entities like Keystone Cooperative or Indiana Farm Bureau gain immediate credibility and customer access more effectively than direct-to-farmer digital marketing approaches. Multiple stakeholders stressed that technology adoption requires realistic pricing for commodity economics and simple solutions to clear problems rather than complex "technology wizardry."

The product cycle from R&D to farm adoption is lengthy and lacks necessary testing infrastructure: Agbioscience startups seeking to validate solutions approach operating farmers with R&D requests spanning six to twelve months. This creates burden for farmers who bear costs and risks of experimentation while many startups subsequently fail, leading to further lost time for farmers. The absence of dedicated testing facilities means that operational farms shoulder the validation burden for technologies that may never reach commercial viability. This infrastructure gap slows time-to-market for viable innovations while failing to filter out non-viable solutions earlier in development cycles, creating inefficiency throughout the innovation pipeline.

An agbioscience-focused venture studio highlighted the need for dedicated test facilities that prevent farmer burden due to constant startup validation requests, noting that farmers' experiences with failed technologies contribute significantly to general technology adoption resistance. An Indiana state government agency identified southern Indiana's melon production region as an example of a potential incubated testing ecosystem with close-knit communities willing to collaborate.

Food is Health

Consumer focus on healthier foods conflicts with existing procurement processes across the value chain: While consumer packaged goods (CPG) companies seek healthier ingredients, procurement practices often lead to purchase of cheaper commodity options with limited measurements of nutrient density, crop quality, or specific nutritional properties that end users value. This conflicting signal in the value chain travels upstream: as the science around nutrient-dense crop production changes rapidly, farmers struggle to adapt year-to-year. Economic incentive structures do not currently connect better farming practices to premium pricing that justifies the additional costs and complexity of production.

A major commercial health payer emphasized the need for platforms that connect farmers and growers to purchasers across the value chain including healthcare payers, vendors, and individual consumers seeking specific nutritional attributes. The organization highlighted that CPGs and farmers do not communicate regularly enough outside of procurement cycles. Multiple stakeholders noted the missing translation between demand signals from CPG and healthcare entities and production incentives that would motivate farmers to modify practices.

[1] McKinsey & Company. "Agtech: Breaking down the farmer adoption dilemma." February 2023.

[2] McKinsey & Company. "Agtech: Breaking down the farmer adoption dilemma." February 2023.

Clinical outcome improvements are difficult to measure in food: Healthcare payers require demonstrable clinical outcome improvements to build sustainable business cases justifying nutrition program investments at scale. The economic sustainability of food-as-medicine programs remains questionable despite strong stakeholder interest because of the difficulty of evidence generation. Current evidence-based nutrition programs typically rely on foundation funding and grants that are limited and unsustainable long-term, with commercially insured populations underserved compared to food insecurity-focused programs.

The health insurance firm interviewed articulated the evidence imperative most directly, stating that while passion and interest exist, business cases will fail without strong evidence demonstrating cost-effectiveness and return on investment for payers. The organization emphasized the need to capture momentum with data demonstrating measurable clinical impacts tied to food interventions.

Consumer demand for protein-rich foods is sustained and growing: Protein-rich foods are drawing consumer spend across food categories. However, current methods of protein optimization among processors and CPG customers involve ultra-processed ingredients. CPG companies need ingredients that can be dropped into existing processes to continue keeping operational costs low.

The interviewed health insurance company emphasized protein innovation as a key opportunity area, highlighting the need for healthier processed food options that meet consumer cost and convenience requirements while improving nutritional profiles. The organization acknowledged the tension between making ultra-processed foods, less processed while making pure, whole foods more approachable.

Continued adoption of GLP-1 medications is changing the landscape of food consumption: GLP-1 medications are anticipated to reduce calorie demand by approximately 20 percent[3] while shifting consumer spending from food purchases to pharmaceutical costs.[4] This forces fundamental rethinking of agricultural and food processing business models historically focused on yield maximization. The agbioscience value chain must pivot from "more calories" to "better calories" as the value proposition, requiring innovations in business models as well as science and technology to reward attributes beyond yield. These include nutritional quality, functional properties, and health outcomes.

Multiple stakeholders identified GLP-1 medications as transformative forces affecting all three innovation focus areas. An Indiana state government agency noted the state's unique ecosystem includes all necessary anchor tenants for exploring alternatives to GLP-1 medications through food-based interventions with Eli Lilly, Elevance Health, Elanco, and Corteva Agriscience all present and potentially collaborative.

BioInnovation

Gene editing is technologically complex but operationally viable for farmers: Gene editing represents the highest-consensus biotechnology opportunity among Indiana stakeholders because it delivers improvements with minimal operational burden to farmers who can plant improved seed varieties without changing equipment, workflows, or management practices. The last 30 years of agricultural yield improvements came primarily from genetic advancements. Gene editing can target traits beyond yield including drought tolerance for climate resilience and enhanced nutritional profiles addressing food-as-health priorities. The technology works within existing supply chains and scales without requiring behavior change from farmers, equipment manufacturers, or processors, distinguishing it from biologicals and precision agriculture solutions.

An independent retail seed company emphasized the operational simplicity advantage, noting that genetic improvements scale seamlessly compared to biologicals requiring storage, mixing, and application complexity. The presence of Corteva Agriscience and Beck's Hybrids in Indiana, along with strong university genetics programs at Purdue University, Indiana University, and the University of Notre Dame create research and commercialization infrastructure supporting gene editing development. An agbioscience-focused venture studio positioned gene editing as complementary to both Farmer-Focused Innovation and Food is Health priorities, though challenges remain including consumer acceptance variability, regulatory pathway navigation across different jurisdictions, and export market restrictions in some countries.

[3] Morgan Stanley. "Could Obesity Drugs Take a Bite Out of the Food Industry." September 2023.

[4] Morgan Stanley. "The Exponential Growth of Obesity Drugs." May 2025.

Fermentation and optimization of agricultural waste streams have a longer-term development adoption roadmap: Fermentation technologies and agricultural waste stream conversion represent five-to-fifteen-year strategic priorities essential for creating new demand for agricultural commodities. Companies across various sectors are seeking bio-based replacements for petroleum-derived chemicals, sustainable packaging materials, specialty ingredients, and other high-value applications. Use of agricultural waste streams could diversify agricultural revenue beyond commodity food and feed markets. Indiana's distributed processing infrastructure enables "over-the-fence" partnerships where biomanufacturing facilities co-locate with agricultural processors. Examples include Lake County-based FiberX, which converts corn stover into bioindustrial resins and biocomposite plastics using technology developed in partnership with Purdue University.

Multiple organizations emphasized fermentation and waste valorization as long-term strategic imperatives. Stakeholders noted, however, that cost equations historically fail without subsidies or target intervention; with typical timelines of three to four years to first contract, followed by lingering scalability questions. Multiple stakeholders highlighted the state's processing capabilities including 15 ethanol biorefineries (ranking fifth nationally) as foundations for expanded bioinnovation. The recent Liberation Bioindustries precision fermentation facility investment in Richmond demonstrates commercial interest, and Heartland BioWorks Regional Tech Hub designation for domestic bioproduction provides policy and infrastructure support. Stakeholders emphasized the need for mid-scale biomanufacturing capacity, which many are currently engaging overseas.

Biological products for agriculture presently lack focus on the realities of operational implementation: Stakeholders expressed that biological products, including biological fertilizers and pesticides, are experiencing market oversaturation, product inconsistency, and deep farmer skepticism from a decade of unfulfilled promises. It is estimated that thousands of biological product startups have entered the market, with approximately 90 percent failing to deliver consistent performance, creating farmer skepticism toward "bio"-marked products.[5] Unlike chemical inputs that have been optimized over time to provide predictable efficacy, biological products perform unpredictably across field conditions, require refrigerated storage, and are incompatible with current operations (e.g., requiring tank mixing and / or separate passes). The market needs quality control and a focus on the realities of implementation, rather than additional entrants.

Several stakeholders expressed a preference to de-prioritize new biologicals and biopesticides despite their prominence in SEC filings and startup ecosystems. Organizations noted that distribution partners including agricultural retailers and cooperatives have similarly sourced on biological products after years of farmer complaints about inconsistent performance. However, innovation that involves formulation of biological technologies to make them thermally and chemically stable enough for tank mixing with conventional inputs could solve a critical operational compatibility barrier. This represents a focus delivery method and implementation, rather than specific therapeutics.

National industry priorities

Methodology

In addition to stakeholder interviews, a natural language analysis of public SEC filings provided further clarity as to priorities shared among major corporate stakeholders across the agbioscience value chain. This analysis involved an in-depth scraping of annual reports filed by public-traded companies aligned to the relevant NAICS codes, followed by artificial intelligence synthesis of core scientific themes using a science-augmented language model. The table below provides a synthesis of priority and challenges across the Velocity focus areas.

[5] Gitnux. "Start-up Failure Statistics." 2026. https://gitnux.org/startup-failure-statistics/

Focus Area	Priority	Challenges to Address
Farmer-Focused Innovation	Climate-Resilient Farming Systems	Developing predictive weather tools, climate-adapted crop varieties, water efficiency technologies, and carbon sequestration practices that maintain farmer profitability despite increasing climate variability
	Agricultural Labor Automation & Robotics	Creating autonomous equipment, robotic harvesting systems, automated processing solutions, and AI-driven farm management tools with <2 year ROI that address chronic labor shortages
	Integrated Farm Data Intelligence	Building unified platforms that connect fragmented farmer data (equipment telemetry, input application, pest pressure, grain marketing, weather) into actionable decision support
	RegTech for Biologicals & Regenerative Agriculture	Developing compliance automation, data generation services, and regulatory navigation platforms that reduce the 3-10 year approval timelines and costs for new biological inputs

Focus Area	Priority	Challenges to Address
Food is Health	Upcycled Ingredients from Agricultural Waste	Converting corn stover, soybean hulls, food processing co-products, and crop residues into high-value proteins, fibers, and functional ingredients for food applications
	Mid-Chain Cold Chain Intelligence	Deploying IoT sensors, AI routing, shelf-life extension technologies, and predictive analytics to reduce the 40% of food waste occurring in mid-supply chain while improving food access
	Personalized Nutrition Platforms	Building microbiome testing to drive customized food/supplement recommendation alongside delivery systems that connect individual health data with precision nutrition products
	Biofortified & Nutrient-Dense Crops	Using genomic selection and breeding to enhance vitamin, mineral, protein, and phytonutrient content in staple crops (corn, soybeans) at the production level
	Food Desert Access Technology	Creating mobile markets, smart pantries, subsidized delivery models, and last-mile logistics solutions that increase access to healthy, affordable food in underserved urban and rural communities
	Precision Fermentation for Food Manufacturers	Producing animal-free dairy proteins (whey, casein), egg proteins, fats, and novel ingredients via fermentation that enable next-generation food reformulation

Focus Area	Priority	Challenges to Address
BioInnovation	Synthetic Biology Platform for Agriculture	Developing rapid microbial engineering platforms (CRISPR, directed evolution) for custom bioinputs: site-specific biofertilizers, biopesticides, biostimulants designed for Indiana soil and climate conditions
	Agricultural Residue Biorefinery	Converting corn stover, soybean hulls, livestock waste into bioplastics, biochemicals, biomaterials, and advanced biofuels at commercial scale using enzymatic and fermentation processes
	Integrated Microbiome Optimization (Soil-Plant-Animal-Human)	Creating unified platform optimizing microbiomes across the full value chain: soil microbes > plant endophytes > animal gut > human gut for holistic health outcomes
	Rapid Bioinput Screening & Field Validation Service	Building high-throughput screening facilities + field trial networks + regulatory support that de-risk and accelerate biologicals development from 5-10 years to 2-3 years
	Biomaterials from Bioprocessing Co-Products	Transforming ethanol co-products (glycerin, DDGS), biodiesel byproducts, and fermentation waste into higher-value biomaterials, bioplastics, and specialty chemicals
	Low-Carbon Ammonia & Green Chemistry	Scaling carbon capture, electrolyzer technology, and biological ammonia production to create essential agricultural inputs (fertilizer, hydrogen) with zero/negative carbon emissions

Velocity Accelerator Challenge Statements

Based on the agbioscience economic footprint in Indiana, stakeholder interviews, and publicly disclosed corporate priorities, problem statements for the Velocity Accelerator across each focus area follow below.

Farmer-Focused Innovation

Leverage technology to assist farmers with some of the most critical issues facing their operations; including farm data intelligence and interoperability, regulatory navigation and compliance automation, and human-out-of-loop automation for labor-intensive operations. Challenges to address include:

- Build unified farm data platforms that consolidate 500,000+ daily data points from fragmented systems into predictive decision support tools that demonstrate clear ROI and integrate seamlessly with existing farm operations.
- Develop automated compliance and regulatory navigation platforms that reduce time burden of complex EPA pesticide point systems, conservation program paperwork, and multi-jurisdictional requirements while maintaining farmer access to essential chemistry and economic incentives.
- Create autonomous equipment and AI-enabled robotics for complex farm tasks (specialty crop harvesting, livestock management, processing operations) that deliver under 2-year ROI, mitigate skilled labor needs, and integrate with existing farm infrastructure.

Market Competitive Position:

- Agricultural retail distribution networks and farmer membership organizations provides built-in validation and go-to-market partners.
- Indiana state government has expressed a strong desire to see regulatory technology (“RegTech”) solutions despite resource constraints.
- Corteva Agriscience, Beck’s Hybrids and others offer integration pathways with precision ag systems, and provide regulatory expertise, multi-jurisdictional approval experience.
- As the nation’s most manufacturing intensive state, thousands of Indiana workers have the know-how to develop and deploy robotics.
- Specialty crop diversity (5th in watermelon, 3rd in pumpkins, 3rd in spearmint, 2nd in tomatoes for processing) provides uses cases beyond commodity row crops.

Food is Health

Develop and accelerate innovation that increases food and nutrition access and enables food as a driver of health, giving opportunities across the agricultural and healthcare value chains to positively impact healthier lives, communities and environment. Challenges to address include:

- Build platforms connecting farmers to healthcare payers, CPG companies, and health-conscious consumers that enable transparent pricing premiums for nutrient-dense crops, identity-preserved supply chains at commercial scale, and measurable clinical outcome tracking.
- Develop data collection, integration, and analytics platforms demonstrating measurable clinical outcomes (ER visit reduction, hospitalization decrease, medication use reduction) from food interventions, enabling sustainable business cases for healthcare payers beyond temporary grant funding.
- Develop protein-enriched ingredients and functional food components that integrate seamlessly into existing CPG manufacturing processes while improving macronutrient profiles and meeting consumer requirements.

Market Competitive Position:

- Elevance Health (major commercial insurer with 47M members) headquartered in Indianapolis, explicitly seeking farmer-payer connection platforms.
- IU School of Medicine ranks 13th among public medical schools in NIH funding, providing clinical research infrastructure and Purdue has a nationally recognized food sciences program.
- More than 65,000 workers across nearly 2,000 establishments in Value-Added Food and Nutrition provide processing and reformulation capacity.
- Grain and oilseed processing infrastructure (3,322 workers in milling) enables plant-based protein extraction from corn/soy at scale.
- Corn (#5 nationally) and soybean (#4 nationally) production provides protein feedstock proximity reducing ingredient costs.

BioInnovation

Develop technology that unlocks powerful markets for bio-based products, including focuses on gene editing for operational simplicity, mid-scale biomanufacturing and fermentation infrastructure, and agricultural waste stream biorefinery transformations. Challenges include:

- Advance gene editing technologies delivering enhanced crop traits (climate resilience, nutritional density, nitrogen-use efficiency) through improved seed varieties that minimize operational change requirements.
- Advance technologies enabling modular, flexible mid-scale fermentation and bioprocessing infrastructure that support pilot and scaling of precision fermentation, microbial strain engineering, and bio-based chemical production domestically.
- Develop enzymatic hydrolysis, fermentation, and chemical conversion technologies transforming high-volume agricultural waste streams into high-value bioplastics, biochemicals, specialty food ingredients, and advanced materials at commercial scale with positive economics.

Market Competitive Position:

- Beck's Hybrids headquarters provides direct commercialization pathway and farmer distribution network.
- Corteva Agriscience offers R&D infrastructure and multi-jurisdictional regulatory expertise.
- 15 ethanol biorefineries (5th nationally) provide bioprocessing expertise, workforce, and infrastructure foundation.
- Abundant low-cost feedstock from corn/soybean production plus processing waste streams co-located with potential biomanufacturing sites.
- Specialty crop production (#5 watermelon, #3 pumpkins, #3 spearmint and #2 tomatoes for processing) provides diverse non-commodity feedstocks beyond corn and soy.
- Food distribution and logistics capabilities could enable waste aggregation at commercial scale.

Conclusion

The 2026 Velocity Accelerator can spur innovation that enables Indiana to grow its agbioscience leadership while addressing critical issues that face the sector as a whole. Indiana's combination of leading research institutions, Fortune 500 agbioscience companies, and deep manufacturing tradition positions the state to lead across the proposed innovation areas. The problem statements outlined in this report, which span farm data intelligence, food-as-medicine evidence generation, and bio-based manufacturing, are drawn from interviews with industry anchors, academic leaders, and policymakers as well as public company reporting. These interviews and analysis reveal urgency and opportunity to meet challenges facing the agriculture and food supply chains.

Stakeholder interviews and data analysis demonstrate that the Velocity Accelerator focus areas are increasingly interconnected. Data platforms that reduce farmer burden can simultaneously generate the clinical evidence healthcare payers need; bio-based ingredients developed through fermentation can improve both crop resilience and consumer nutrition; automation that addresses labor shortages can also reduce the cost of domestic manufacturing. Innovations that bridge these boundaries will be strongly positioned to strengthen Indiana's agbioscience economy and generate unique assets that perpetuate the state's leadership.

Appendix A: Velocity Accelerator Full Challenge Statements

Based on the agbioscience economic footprint in Indiana, stakeholder interviews, and publicly disclosed corporate priorities, problem statements for the Velocity Accelerator across each focus area follow below.

Farmer-Focused Innovation

Problem Statement 1: Farm Data Intelligence & Interoperability

Challenge: Build unified farm data platforms that consolidate 500,000+ daily data points from fragmented systems into predictive decision support tools that demonstrate clear ROI and integrate seamlessly with existing farm operations.

Farmer-Focused Innovation

How this challenge addresses stakeholder needs:

- Modern farms generate 500,000 data points daily, expected to increase 800% by 2036.[6]
- Current tools focus on data collection rather than predictive insights that improve decision quality.
- One-third of farmers forego conservation incentives due to paperwork complexity from fragmented systems.
- Farmers cannot migrate decades of operational data into modern platforms, preventing ROI modeling for technology adoption.
- Technology adoption requires 3:1 ROI threshold that farmers cannot assess without integrated operational data.[7]

Farmer-Focused Innovation

Market competitive position

- Agricultural retail distribution networks and farmer membership organizations (Keystone Cooperative, Indiana Farm Bureau) provide built-in validation and go-to-market partners.
- Beck's Hybrids and Corteva Agriscience presence offers integration pathways with precision ag systems.
- Nearly 15,000 workers across plant science and crop protection and ag equipment, technologies, and systems provide capacity to develop precision ag solutions.[8]

Farmer-Focused Innovation

Example innovations:

- Integrated agronomic intelligence platforms consolidating equipment telemetry, input application, pest monitoring, grain marketing, and weather data into predictive ROI calculators for technology adoption decisions.
- AI-driven legacy data migration and transformation tools enabling farmers to analyze 20+ years of operational history in modern decision support systems.

[6] International Data Corporation. "The Problem, Potential and Promise of a Data Revolution in Agriculture." October 2022.
[7] McKinsey & Company. "Agtech: Breaking down the farmer adoption dilemma." February 2023.
[8] CICP Advanced Industries Dashboard. 2026.

Farmer-Focused Innovation

Problem Statement 2: Regulatory Navigation & Compliance Automation

Challenge: Develop automated compliance and regulatory navigation platforms that reduce time burden of complex EPA pesticide point systems, conservation program paperwork, and multi-jurisdictional requirements while maintaining farmer access to essential chemistry and economic incentives.

Farmer-Focused Innovation

How this challenge addresses stakeholder needs:

- EPA's new points-based pesticide compliance system has posed an implementation challenge for farmers across disparate web resources.
- Restricted chemistry access driving increased tillage, potential yield reduction, and food inflation pressure.
- One-third of farmers forego valuable conservation incentives due to administrative complexity, representing significant lost revenue.

Farmer-Focused Innovation

Market competitive position:

- Indiana state government has expressed a strong desire to see regulatory technology ("RegTech") solutions despite resource constraints.
- Corteva Agriscience and Beck's Hybrids provide regulatory expertise and multi-jurisdictional approval experience.
- More than 50,000 farms across diverse crop types provide testing ground for compliance solutions.

Farmer-Focused Innovation

Example innovations:

- EPA pesticide points calculators providing field-by-field and chemical-by-chemical compliance tracking with restricted chemistry optimization.
- Conservation program documentation automation generating compliant paperwork from existing farm management system data.

Farmer-Focused Innovation

Problem Statement 3: Human-Out-of-Loop Automation for Labor-Intensive Operations

Challenge: Create autonomous equipment and AI-enabled robotics for complex farm tasks (specialty crop harvesting, livestock management, processing operations) that deliver under 2-year ROI, mitigate skilled labor needs, and integrate with existing farm infrastructure.

Farmer-Focused Innovation

How this challenge addresses stakeholder needs:

- Labor availability was identified as top operational challenge by public and private stakeholders.
- Sophisticated equipment requires even-scarcer skilled technical labor, creating circular challenge.

Farmer-Focused Innovation

Market competitive position:

- As the nation's most manufacturing intensive state, thousands of Indiana workers have the know how to develop and deploy robotics.
- Specialty crop diversity (5th in watermelon, 3rd in pumpkins, 3rd in spearmint and 2nd in tomatoes processing) provides use cases beyond commodity row crops.
- Strong equipment manufacturing ecosystem with precision agriculture expertise supports autonomous system integration.

Farmer-Focused Innovation

Example innovations:

- Autonomous robotic harvesting systems for specialty crops (melons, pumpkins, vegetables) with soft-manipulation end effectors and machine vision.
- AI-powered livestock monitoring and autonomous feeding/health management systems reducing daily labor by 70%+ for animal operations.
- Swarm robotics platforms for crop scouting, targeted pest/weed management, and variable-rate input application requiring single-operator oversight of 20+ units.

Food is Health

Problem Statement 1: Agricultural-to-Healthcare Supply Chain Connectivity

Challenge: Build platforms connecting farmers to healthcare payers, CPG companies, and health-conscious consumers that enable transparent pricing premiums for nutrient-dense crops, identity-preserved supply chains at commercial scale, and measurable clinical outcome tracking

Food is Health

How this challenge addresses stakeholder needs:

- CPG procurement practices default to cheapest commodities despite stated commitments to healthier ingredients.
- Healthcare payers need clinical outcome evidence but lack supply chain connectivity to influence food production practices.
- GLP-1 medications forcing agricultural value proposition shift from “more calories” to “better calories”.

Food is Health

Market competitive position:

- Elevance Health (major commercial insurer with 47M members) headquartered in Indianapolis, explicitly seeking farmer-payer connection platforms.
- More than 65,000 workers across nearly 2,000 establishments in Value-Added Food and Nutrition provide processing and reformulation capacity.

Food is Health

Example innovations:

- Blockchain-verified nutrient density tracking platforms connecting regenerative farming practices to healthcare payer premium payments and CPG procurement.
- Commercial-scale identity preservation logistics enabling specialty grain segregation (low-glycemic, high-protein, micronutrient-enhanced) from farm through processing.
- Integrated procurement-to-prescription systems translating CPG nutritional targets and clinical requirements into agronomic practice incentives with transparent pricing.

Food is Health

Problem Statement 2: Evidence Generation for Food-as-Medicine

Challenge: Develop data collection, integration, and analytics platforms demonstrating measurable clinical outcomes (ER visit reduction, hospitalization decrease, medication use reduction) from food interventions, enabling sustainable business cases for healthcare payers beyond temporary grant funding.

Food is Health

How this challenge addresses stakeholder needs:

- Healthcare payers require strong clinical evidence but current food-as-medicine business cases economically unsustainable without foundation grants.
- Current nutrition programs rely on limited/unsustainable foundation funding rather than commercial payer reimbursement.
- GLP-1 medications create an urgency to demonstrate food-based alternatives for chronic disease management.

Food is Health

Market competitive position:

- Elevance Health commercial insurance member base provides population for outcome tracking and real-world evidence generation.
- IU School of Medicine ranks 13th among public medical schools in NIH funding, providing clinical research infrastructure and Purdue has a nationally recognized food sciences program.
- Indiana Farm Bureau and Keystone Cooperative facilitate farmer recruitment for longitudinal food production studies.

Food is Health

Example innovations:

- Clinical outcome platforms integrating food intervention data with EHR/claims data to track ER visits, hospitalizations, and medication utilization with statistical rigor.
- Randomized controlled trial infrastructure purpose-built for food-as-medicine interventions in commercially insured populations with multi-year follow-up.
- Payer ROI calculators using real-world evidence to demonstrate cost-effectiveness of nutrition programs versus pharmaceutical interventions for chronic disease.

Food is Health

Problem Statement 3: Protein Optimization and Functional Ingredient Innovation

Challenge: Develop protein-enriched ingredients and functional food components that integrate seamlessly into existing CPG manufacturing processes while improving macronutrient profiles and meeting consumer requirements.

Food is Health

How this challenge addresses stakeholder needs:

- Protein is driving purchases across all food categories regardless of GLP-1 adoption.
- GLP-1 users maintain or increase protein intake even as total calorie consumption drops 20%, intensifying protein demand.
- Current protein fortification relies heavily on ultra-processed ingredients, creating tension with clean-label consumer demands.
- CPG companies need ingredients compatible with existing production lines to control capital costs and maintain margins.

Food is Health

Market competitive position:

- Coca-Cola's 2020 acquisition of Fairlife, a high-protein dairy brand, demonstrates major CPG appetite for protein-enhanced products originating from Indiana's dairy infrastructure.
- More than 65,000 workers across nearly 2,000 establishments in Value-Added Food and Nutrition provide processing and reformulation capacity.
- Grain and oilseed processing infrastructure (3,322 workers in milling) enables plant-based protein extraction from corn/soy at scale.
- Corn (#5 nationally) and soybean (#4 nationally) production provides protein feedstock proximity reducing ingredient costs.

Food is Health

Example innovations:

- Plant-based protein isolates from corn or soy byproducts with neutral flavor and color profiles enabling fortification of bakery, snack, and beverage applications without reformulation.
- Precision fermentation-derived complete proteins (all essential amino acids) providing animal-equivalent nutrition in vegan/vegetarian products.
- Functional ingredient platforms delivering 20g+ protein per serving in processed foods while reducing sodium, sugar, and saturated fat without texture or taste degradation.

BioInnovation

Problem Statement 1: Gene Editing for Operational Simplicity

Challenge: Advance gene editing technologies delivering enhanced crop traits (climate resilience, nutritional density, nitrogen-use efficiency) through improved seed varieties that minimize operational change requirements.

BioInnovation

How this challenge addresses stakeholder needs:

- The last 30 years of agricultural yield gains came primarily from genetic improvements, not acreage expansion or labor increases.
- Climate variability is accelerating need for drought tolerance, heat resistance, and adaptability traits beyond what conventional breeding timelines can deliver.
- Food-is-health demands require nutritional enhancement (protein, micronutrients, bioavailability).
- Gene editing requires minimal operational change.
- Regulatory pathways are maturing with more predictable approval timelines than previous decades, reducing commercialization risk.

BioInnovation

Market competitive position:

- Beck's Hybrids headquarters provides direct commercialization pathway and farmer distribution network.
- Corteva Agriscience offers R&D infrastructure and multi-jurisdictional regulatory expertise.
- Purdue/IU/Notre Dame genetics and plant science programs provide academic research foundation with strong industry collaboration history.
- Farm sector workers provides early adopter base for field validation.
- Top-5 national corn/soybean production creates massive addressable domestic and export markets for improved varieties.

BioInnovation

Example innovations:

- CRISPR-edited corn and soybean varieties with improved water-use efficiency under drought stress, maintaining yield with reduced irrigation.
- Nutrient-biofortified crops with enhanced protein content, nutrient density, or improved amino acid profiles addressing malnutrition and processed food reformulation needs.
- Nitrogen-use-efficient varieties reducing synthetic fertilizer requirements while maintaining or improving yields, lowering farmer input costs, and mitigating environmental impact.

BioInnovation

Problem Statement 2: Mid-Scale Biomanufacturing and Fermentation Infrastructure

Challenge: Advance technologies enabling modular, flexible mid-scale fermentation and bioprocessing infrastructure that support pilot and scaling of precision fermentation, microbial strain engineering, and bio-based chemical production domestically.

BioInnovation

How this challenge addresses stakeholder needs:

- Current U.S. shortages of mid-scale bioreactors forcing promising companies to scale operations internationally.
- Liberation Bioindustries' Richmond precision fermentation facility demonstrates commercial demand for Indiana biomanufacturing capacity.
- Growing corporate demand for bio-based replacements for petroleum-derived chemicals, packaging, and specialty ingredients creating market pull.

BioInnovation

Market competitive position:

- 15 ethanol biorefineries (5th nationally) provide bioprocessing expertise, workforce, and infrastructure foundation.
- Distributed processing infrastructure enables “over-the-fence” co-location partnerships with agricultural processors for feedstock and utility sharing.
- Abundant low-cost feedstock from corn/soybean production plus processing waste streams co-located with potential biomanufacturing sites.

BioInnovation

Example innovations:

- Modular 50-500L bioreactor facilities with shared downstream processing (filtration, purification, drying) enabling 5-10 startups to share capital-intensive equipment.
- Contract fermentation services with strain optimization, process development, and regulatory support accelerating biologicals from lab-scale to commercial production.
- Integrated biorefinery demonstration facilities converting multiple feedstocks (corn stover, soy hulls, glycerin) to bio-based chemicals using interchangeable unit operations.

BioInnovation

Problem Statement 3: Agricultural Waste Stream Biorefinery

Challenge: Develop enzymatic hydrolysis, fermentation, and chemical conversion technologies transforming high-volume agricultural waste streams into high-value bioplastics, biochemicals, specialty food ingredients, and advanced materials at commercial scale with positive economics.

BioInnovation

How this challenge addresses stakeholder needs:

- Producers and processors see a need to create new non-food demand for agricultural commodities as GLP-1 medications reduce overall calorie consumption.
- Corporations across sectors are seeking bio-based content in packaging, chemicals, and materials to meet sustainability commitments, creating demand pull.
- Indiana agbiosciences startups, such as previous Velocity Accelerator winner FiberX, are already exploring conversion of agricultural residue into bioplastics.

BioInnovation

Market competitive position:

- Louis Dreyfus biodiesel facility and major ag processors (e.g., Cargill, ADM, Bunge, Primient) produce additional soy/corn processing waste.
- Specialty crop production (#5 watermelon, #3 pumpkins, #3 spearmint) provides diverse non-commodity feedstocks beyond corn and soy.
- Food distribution and logistics capabilities could enable waste aggregation at commercial scale.

BioInnovation

Example innovations:

- Enzymatic deconstruction platforms converting corn stover and soybean hulls into fermentable sugars for bio-based polymer, chemical, or biofuel production.
- DDGS and glycerin biorefinery technologies upgrading low-value ethanol co-products into specialty chemicals, animal-free proteins, or biomaterials.
- Specialty crop waste valorization processes extracting high-value compounds from melon and pumpkin processing waste before biomass conversion to energy or materials.

Appendix B: The AgriNovus Innovation Platforms

AgriNovus defines five innovation platforms that lie across the value chain of food production and consumption. These sectors are outlined in Table 2 and help industry stakeholders align economic activity to innovation focus areas. A NAICS code mapping of these segments can be found via the CICP Advanced Industries Dashboard.

Table 2: Definition of AgriNovus focus areas

Innovation Platform	Description
Agricultural Equipment, Technologies, and Systems	Tractors, harvesting machinery, other farm machinery, and agricultural technology aimed at increasing farm efficiency and productivity.
Agricultural Production, Distribution and Processing	Spans all types of crop and livestock production and includes primary agricultural processing for animal and human consumption and industrial applications, such as biofuel manufacturing.
Plant Science and Crop Protection	Seeds and crop protection, such as chemical and biological herbicides, insecticides, and fungicides; biostimulants; and plant nutrient solutions.
Animal Health and Nutrition	Preventatives and pharmaceuticals, biologics, diagnostics, and medicinal and nutritional feed additives for livestock and companion animals
Value-Added Food and Nutrition	Spans a variety of manufactured foods: dairy products, processed meat, processed fruits and vegetables, bakery products, functional foods, confectionery, edible oil, condiments, sweeteners and beverages.

Multiple innovation platforms drive activity across **upstream** segments, which encompass primary production, seed technology, and agricultural inputs. **The Agricultural Equipment, Technologies, and Systems** platform provides the machinery, precision agriculture tools, and data platforms that enable efficient farm operations. **The Plant Science and Crop Protection** platform supplies the fertilizers, pesticides, and biological products that optimize crop health and yield. **The Animal Health and Nutrition** platform supports livestock operations through feed manufacturing and veterinary biologicals.

The Agricultural Production, Distribution and Processing platform anchors this segment through crop and livestock production itself. Together, these innovation platforms convert land, labor, and biological inputs into the raw commodities that flow into midstream processing.

Innovation platforms spanning **midstream** segments transform raw agricultural commodities into intermediate and finished products through processing and manufacturing. **The Agricultural Production, Distribution and Processing** platform plays a central role through primary processing activities such as corn milling, oilseed processing, and ethanol production.

The Value-Added Food and Nutrition platform drives the bulk of midstream activity, encompassing meat and poultry processing, dairy manufacturing, bakery and snack production, beverages, and functional food

ingredients. **The Animal Health and Nutrition** platform contributes through feed manufacturing and products that support animal processing operations. These platforms work together to add economic value to raw commodities while meeting consumer demands for quality, nutrition, and convenience.

Innovation platforms active in **downstream** segments move finished products through the supply chain to retailers and consumers. **The Agricultural Production, Distribution and Processing** platform supports this segment through farm product warehousing and commodity distribution. **The Value-Added Food and Nutrition** platform extends into downstream through grocery wholesalers and refrigerated warehousing

that ensure product quality and availability. Efficient coordination across these platforms is critical for reducing waste, maintaining food safety, and connecting Indiana's agbioscience producers with domestic and global markets.

The relevance of AgriNovus innovation platforms to agbiosciences value chain segments is shown in **Table 3.**

Table 3: Relevance of AgriNovus innovation platforms to agbioscience value chain segments

		Innovation Platforms				
Value chain	Segments	Agricultural Equipment, Technologies, and Systems	Agricultural Production, Distribution and Processing	Plant Science and Crop Protection	Animal Health and Nutrition	Value-Added Food and Nutrition
Upstream	Primary Production & Seed Technology	✓	✓	✓	✓	
	Agricultural Inputs & Equipment	✓		✓	✓	
Mid-stream	Animal Protein Processing		✓		✓	✓
	Plant-Based Food Processing		✓			✓
	Beverages		✓			✓
	Specialty Manufacturing		✓			✓
Down-stream	Food Distribution and Logistics		✓			✓

Appendix C: The Agbioscience Value Chain

Indiana's agbiosciences sector spans seven segments that span the full value chain of food production and consumption. These sectors are outlined in the table below.

Characterizing the Agbioscience Value Chain and its Indiana Impact

Positioning in Value Chain	Relevant Segments	Description
Upstream	> Primary Production & Seed Technology > Agricultural Inputs & Equipment	> Initial production of predominantly unfinished and unpackaged agricultural products
Midstream	> Animal Protein Processing > Plant-Based Food Processing > Beverages > Specialty Manufacturing	> Cross-species microbiome optimization platforms > Personalized nutrition delivery and intelligence systems
Downstream	> Food Distribution & Logistics	> Precision fermentation for food ingredients or intermediates > Rapid microbial strain engineering

Upstream

Primary Production & Seed Technology

Primary Production & Seed Technology encompasses crop and livestock production activities alongside the development and commercialization of improved seed varieties. Activities in this segment include row crop farming (e.g., corn, soybeans, wheat), specialty crops (e.g., vegetables, fruits), livestock operations, and seed breeding programs. Products range from commodity grains and oilseeds to genetic innovations that enhance yield, disease resistance, and environmental adaptability. This segment forms the essential foundation of the food system, converting land, labor, and biological inputs into raw agricultural commodities that feed midstream and downstream sectors. Trends in this sector are closely linked to economic trends in food; for example, shortages in specific upstream products can lead to increases in consumer prices and food availability. As such, productivity of this sector is closely monitored.

For the last several decades, improvements in seed technology have largely driven productivity gains, rather than expanded acreage or labor inputs.

Agricultural Inputs & Equipment

Agricultural Inputs & Equipment includes tools, machinery, chemicals, and biologicals that enable modern farming operations. Example products include tractors and harvesting equipment, precision agriculture technologies (e.g., GPS guidance, variable rate application systems, drones), fertilizers, herbicides, insecticides, fungicides, and biological crop protection products. This segment also encompasses farm management technology platforms that integrate data from equipment, weather systems, and agronomic models. The segment strongly influences farm productivity, sustainability, and efficiency. For example, innovations in precision agriculture enable farmers to apply inputs more efficiently, reducing costs and environmental impact while increasing yields.

Use of business intelligence tools, automation, computational modeling, and other technology are increasingly important for modern farms, particularly as they navigate complexity and uncertainty of a quickly evolving value chain. This segment plays a central role in addressing labor shortages and climate variability challenges.

Midstream

Animal Protein Processing

Animal Protein Processing transforms livestock into meat, poultry, and egg products for retail and food service markets. This segment includes slaughtering operations, processing facilities that produce cuts and further-processed products (e.g., sausages, deli meats, frozen entrees), rendering operations that convert byproducts into pet food and industrial materials, and packaging operations. The segment provides essential protein for human diets while driving substantial economic impact. In some rural communities, processing facilities are often among the largest employers. Animal protein processing also generates substantial economic multiplier effects: every job in meat processing supports additional jobs in transportation, packaging, equipment maintenance, and related services. The segment faces ongoing challenges around labor availability, food safety, and sustainability.

Plant-Based Food Processing

Plant-Based Food Processing converts raw agricultural commodities into the intermediate and finished food products. This segment encompasses grain milling (e.g., flour, cornmeal), oilseed processing (e.g., vegetable oils), bakery manufacturing, snack food production, processed fruits and vegetables, confectionery, condiments, and functional food ingredients. Products range from basic and intermediate staples like flour and cooking oil to highly engineered ingredients that provide specific nutritional profiles, textures, or preservation properties. This segment vitally translates bulk agricultural production into consumer-ready forms, adding substantial economic value to raw commodities. The segment increasingly serves as the innovation engine that addresses emerging consumer demands around health, sustainability, and personalized nutrition.

For example, Indiana food processor Epogee was recently acquired by consumer brand David to enhance the protein macronutrient profile of its products. The segment also provides critical food safety functions through processing steps that eliminate pathogens and extend shelf life.

Beverages

The beverages segment is responsible for producing the wide array of drink products consumed by humans and animals. Major subsectors include soft drinks and bottled water, juices, dairy beverages, coffee and tea products, sports and energy drinks, breweries (craft and large-scale), wineries, and distilleries. Beyond consumer

products, this segment additionally includes liquid animal feed supplements. A key trend in this segment includes an emerging focus on functional beverages that deliver specific health benefits, plant-based alternatives to dairy drinks, and low-sugar formulations responding to health-conscious consumers. Beverage innovation often leads broader food trends, as product development cycles are shorter than those in solid foods.

Downstream

Specialty Manufacturing

Specialty Manufacturing encompasses capital-intensive biotechnology and chemical processes that create high-value products from agricultural feedstocks. The primary subsector involves biofuels production (ethanol from corn, biodiesel from soybean oil), but the segment additionally includes industrial enzymes, bio-based products (e.g., plastics, polymers), and pharmaceutical intermediates produced through fermentation or other bioprocessing methods. Products often seek to replace petroleum-based alternatives with renewable, bio-based equivalents, sometimes through agricultural waste streams. This segment is strategically important because it creates new demand for agricultural commodities beyond food and feed markets. Some subsegments support broader policy objectives, such as energy security through domestic biofuel production. Specialty manufacturing typically achieves very high per-worker productivity due to the capital-intensive nature of fermentation facilities and biorefineries.

Food Distribution & Logistics

Food Distribution & Logistics moves agricultural and food products through the supply chain from farms to processing facilities to retail outlets and consumers. This segment includes commodity merchandisers, livestock dealers and auction markets, wholesale food distributors, refrigerated warehousing and cold storage, and transportation services specializing in food and agricultural products. Distribution also increasingly involves direct-to-consumer platforms for farm products and specialty foods. Because food products are perishable and often produced far from consumption centers, efficient distribution systems prevent waste, ensure food safety, enable regional specialization in production, and make diverse food choices available year-round regardless of local growing seasons. Recent disruptions highlighted the vulnerability of food supply chains, leading to renewed focus on distribution infrastructure, cold chain technologies, and regional food systems that shorten the distance between production and consumption.

Consumer Packaged Goods (CPG)

Notably excluded from this segment breakdown is consumer packaged goods (CPG). The CPG sector additionally plays a critical role in the agbioscience value chain, driving direct-to-consumer delivery and sales for finished food products. CPG is not directly included because (a) much of its activity falls outside of the agbioscience sector and it would therefore artificially increase economic impact figures; and (b) many CPG activities are encompassed in the segments outlined above, including plant-based food processing (e.g., General Mills, Kraft) and animal protein processing (e.g., Tyson Foods). As such, CPG is not included in the economic analysis presented below. However, CPG stakeholders are included in the subsequent analysis of trends, priorities, and potential problem statements.