



FARMER-FOCUSED INNOVATION

PROBLEM STATEMENT

Leverage technology to help farmers face compounding risks – increased weather variability, commodity market dynamics, challenging regulatory environments and labor/administrative burden – to create innovation that helps mitigate risk and uncertainty while driving a net return on investment back to the farmer.

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Accelerate 2050: A Vision for Indiana Agbioscience identifies Indiana’s economic performance across food, animal health, plant science, agtech and production agriculture and defines priority opportunities to position Indiana’s agbioscience economy for differentiated growth amid future uncertainty. According to the study, Indiana’s three key opportunities include: farmer-focused innovation, food is health and bioinnovation.

[Download the full report here.](#)

Farmer-Focused Innovation

Farmer-Focused Innovation centers Indiana farmers as advisors, co-creators, and early adopters working collaboratively with early- and growth-stage agbioscience companies in the development of new agbioscience solutions. This opportunity formalizes collaboration between early-adopter farmers and agbioscience early- and growth-stage companies to inform and trial new products, services, and business model innovations that benefit Indiana and beyond.

Indiana has the opportunity to cultivate a thriving community of early-adopter farmers partnering with agbioscience companies, especially start-ups and growth-stage ventures, to create the agbioscience solutions of the future.

Opportunity in Context

A thriving Indiana agbioscience economy requires thriving farmers. However, farmers face compounding risks—increased weather variability, commodity market dynamics, changing regulatory environments and consumer preferences—that add uncertainty to an already challenging business. This is especially true in a place like Indiana, where a high concentration of corn and soybean production creates vulnerability to external shocks and demand changes. Agbioscience innovations hold potential to improve the efficiency and sustainability of farming operations and could offer ways to diversify farm-based revenue (e.g., via tech-enabled value addition or waste valorization). However, a lack of direct farmer input into agbioscience research and development (R&D) efforts means that the products and services available to farmers often fail to deliver clear return on investment or personalized results.⁹ The Farmer-Focused Innovation opportunity brings farmers directly into the agbioscience innovation process so that their interests and opportunities feature centrally in the development of emerging products and services.

This opportunity holds potential to set off a virtuous cycle of value creation for Indiana: early-adopter farmers partner with agbioscience innovators to co-create and shape future offerings; direct access to early adopters attracts new companies to Indiana; those companies create more-informed and demand-driven innovations. Farmer needs are better met and uptake improves, leading to improved farm outcomes. The demonstrated benefits of this approach draw additional capital and companies to Indiana and additional farmers to engage in the process. Indiana strengthens its position as a conducive, enabling environment for innovators and innovative agbioscience companies to thrive.

Critical Components to Capture the Opportunity

- **Mutually beneficial, two-way engagement** between early-adopter farmers and agbioscience companies early in the innovation process
- **A neutral broker** that facilitates farmer-company interactions, including enabling a shared language and equitable risk-reward arrangements
- **Low transaction costs** for both farmers and companies (e.g., streamlined access to early-adopter farmers for companies; pre-vetted innovation opportunities for farmers)
- **Financial incentives** (e.g., equity stakes in agbioscience companies, government grants, profit-sharing agreements) and other risk mitigation resources to pull farmers into the innovation process, especially for small and mid-sized farms that may be less able to take on increased risk (e.g., see the Manufacturing Readiness Grants in Indiana for an adjacent industry example)
- **Risk capital** to support the innovation pursuits of early and growth-stage companies
- **Networking and knowledge-sharing opportunities** for early-adopter farmers to build relationships and deepen the community's innovation and entrepreneurial expertise
- **Mechanisms to identify on-farm innovations** with commercial potential and create pathways for farmers to profit from their inventions

Indiana Strengths to Build Upon

In addition to the strengths identified in the Current State section (pages 11–19), the following are opportunity-specific strengths from which Indiana is well-positioned to build:

- An existing model for farmer-engaged innovation.** AgriNovus convenes Indiana farmers, companies, entrepreneurs, and students in a Producer-Led Innovation Challenge competition with a \$25,000 commercialization prize. Since its launch in 2020, every company that has won the challenge has received follow-on funding or has been acquired. This challenge—founded by farmers—continues to be farmer-funded, with challenge winners selected by farmers.
- Co-location of large-scale agricultural production alongside agbioscience leaders, new entrants, and enabling organizations.** The co-location of producers, distributors, large corporates, research universities, early- and growth-stage companies, and enabling entities such as Elevate Ventures provides a good test bed for agbioscience innovation.
- Strong farmer cooperatives and commodity groups.** Organizations like the Indiana Soybean Alliance and Indiana Farm Bureau (both AgriNovus Board members) provide working knowledge of and access to large farming communities. These organizations can provide starting points for gauging farmer interest and identifying early-adopter farmers.
- Sizable population of new and beginning farmers.** New and beginning farmers (those with less than 10 years of experience) account for nearly 30% of Indiana’s farmer population. With an average age of 43.2 years old, this new generation of farmers stand out as digital natives with potential to integrate new ways of working into their farming operations.
- Indiana’s strategic focus on entrepreneurship.** Indiana Economic Development Corporation’s (IEDC’s) economic development strategy¹¹ highlights entrepreneurship as one of its core components. Conferences like the annual Rally Innovation Conference¹² and the 2025 Global Entrepreneurship Congress hosted in Indianapolis¹³ create strong momentum for the Farmer-Focused Innovation opportunity.

“Being close and being able to get in a pickup truck and talk to your customers—that’s a big deal for us.”

—Chuck Margo¹⁰
CEO of Corteva
About deciding to move
Corteva HQ to Indianapolis

What might success look like?



AgriTech Indiana initiative leads to mutually beneficial partnerships and economic prosperity.

In 2050, through the AgriTech Indiana initiative, Eli, a fourth-generation Indiana corn farmer, and Maya, an innovative tech entrepreneur, forged a partnership. Together, they introduced a fleet of AI-enabled micro-drones that can perform high-precision agriculture—from real-time crop analysis to microdosing of nutrients and organic pest control. Their alliance was facilitated by the program’s grants and collaborative network, which nurtured their venture from a concept to a sustainable, high-yield farming model. This, and hundreds of other similar examples, became the cornerstone of Indiana’s agricultural transformation, highlighting how harmonizing farming expertise with groundbreaking technology can lead to economic prosperity and environmental stewardship.

This is a hypothetical, fictional company.

Recommended Ecosystem Actions for Farmer-Focused Innovation

Farmer-focused innovation opportunity involves developing a user-centered innovation program that recognizes farmers' central role in the agbioscience economy. RTI recommends the following next steps for the ecosystem as it advances this opportunity.

Differentiate Indiana through a thriving community of early-adopter farmers. A thriving community of farmers with the right incentives to become early adopters and innovation partners could differentiate Indiana to early- and growth-stage agbioscience companies. To build this community, conduct research to understand Indiana farmer, advisor, and start-up segmentation, as farms and start-ups vary drastically in their innovation ambitions, needs, and challenges. Collaborate with farmer cooperatives, intermediaries, and other stakeholders to conduct listening tours that pinpoint shared innovation ambitions, opportunities to strengthen farmer entrepreneurship, and incentives for collaboration.

Design user-centered innovation program. Engage potential farmers and agbioscience companies that may participate in the program through listening sessions and user-centered design research methods. Design the innovation program and its offerings tailored to Indiana farmers and entrepreneurs' needs.

Support farmers in navigating key innovation and adoption challenges. Provide targeted services and incentives to help early-adopter farmers manage risks associated with adopting new technologies and practices and diversifying their revenue stream. Recognize that farmers are constantly approached with new solutions that promise efficiency and financial returns. Ensure farmers' time is well spent while still preserving the opportunity for farmers to shape agbioscience innovation in its earliest stages of development.

Develop creative mechanisms that reward farmer contributions to innovation. Pilot innovative investment mechanisms or profit-sharing arrangements that enable farmers to share in the financial success of the innovations they help develop as early-adopter partners. Examples to learn from include AgLaunch and Fulcrum Capital.^{26,27}



Nurture and showcase the Farmer-Focused Innovation program. Convene and nurture connections between early-adopter farmers and agbioscience companies. When possible, showcase innovative Indiana farmers, their inventions, and the innovation program through channels like the Agbioscience podcast. Ensure parallel initiatives and programmatic elements are well-connected to this innovation program to avoid presenting a fractured landscape of entrepreneurial support to farmers.

Measure and adapt for economic, social, and environmental impact. Implement effective learning systems to understand the impact of the Farmer-Focused Innovation program on the Indiana economy and the broader agbioscience economy. Over time, evaluate the net positive social and environmental impacts of technology adoption, alongside economic indicators of growth, to ensure the program contributes to a more sustainable and equitable future for Indiana agriculture. Develop mechanisms to adapt the program and its services based on lessons learned and delivered benefits to continuously improve its impact and effectiveness.

Figure 14: Recommended Ecosystem Actions for Farmer-Focused Innovation

Now (0-1 year)	Next (2-3 years)	Future (4-5 years)
Differentiate Indiana through a thriving community of early-adopter farmers.		
<div data-bbox="243 758 552 852">Design a user-centered innovation program.</div>		
Support farmers in navigating key innovation and adoption challenges.		
<div data-bbox="318 947 803 1041">Develop creative mechanisms that reward farmer contributions to innovation.</div>		
	<div data-bbox="712 1052 1481 1125">Nurture and showcase the farmer-focused innovation program.</div>	
		<div data-bbox="963 1136 1481 1209">Measure and adapt for economic, social, and environmental impact.</div>

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PRODUCER-LED INNOVATION CHALLENGE OPPORTUNITY IDENTIFICATION

AUGUST 2024



A study completed by Aimpoint Research informed the scope of AgriNovus Indiana's 2024 Producer-Led Innovation Challenge and outlined three areas of opportunity to innovate for farmers, including labor shortages and management, administrative burden and technological adoption.

[Download the full report here.](#)



In order to inform the Producer Led Innovation Challenge, AgriNovus sought to understand key inefficiencies that hinder the profitability of Indiana producers. Using both quantitative and qualitative methodologies, Aimpoint Research worked to identify those inefficiencies that are most acutely felt among producers and crystalize specific measures to address them.

Aimpoint conducted a series of in-depth interviews among five Indiana producers with Gross Farm Income (GFI) above \$100K. At the same time, an online survey was conducted among an additional 150 producers who fit the same criteria. While the in-depth interviews conversationally explored producer sentiment towards operational inefficiency, the survey sought to validate that those inefficiencies are indeed felt by the larger population of Indiana producers.

A key pattern from conversations with producers is that the idea of 'inefficiency' is difficult to perceive much less isolate operationally. A common theme is farmers' ways of working are assumed as necessity rather than examined for potential improvement. However, three primary themes emerged in both the qualitative interviews as well as the producer survey.

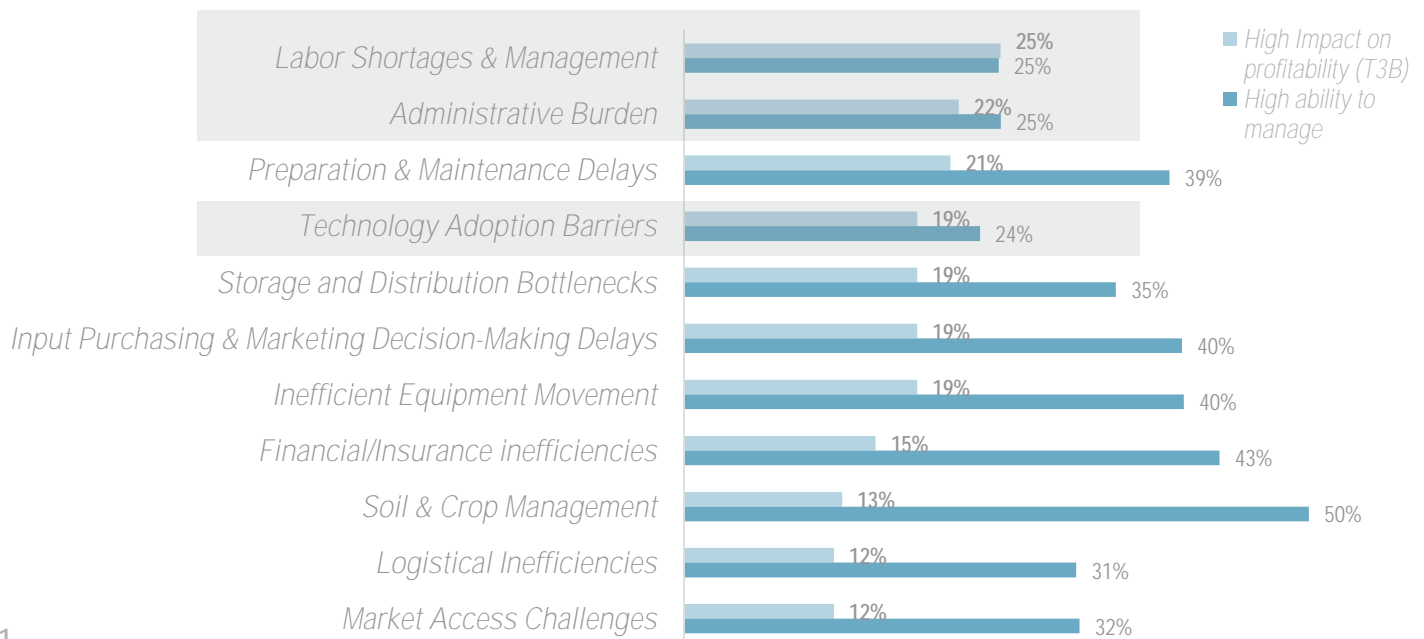
1. Labor Shortages & Management

2. Administrative Burden

3. Technology Adoption Barriers

IMPACT VS. ABILITY

When impact and ability are both considered, the three inefficiencies of labor management, administrative burden, and technological adoption barriers stand out in terms of the disparity between producer ability to manage and the impact to profitability. They are impactful factors that are difficult to manage.





LABOR SHORTAGE AND MANAGEMENT

A major issue that emerged from in-depth discussions with Indiana producers was the issue of labor and its relationship to technological innovation. This sentiment is echoed in the producer study with *'Labor Shortages and Management: Issues managing workers, especially during busy times'* cited as the most impactful inefficiency limiting operational profitability with nearly a third of producers claiming to have **'low ability'** to manage this obstacle.

The agriculture industry has long relied on an immigrant workforce, but fewer young immigrants are entering the workforce, and this trend is not expected to change. As this labor pool dissipates, wages are driven upward making workers both scarce and expensive. While programs like H-2A are helpful, they are cumbersome to navigate. The eventual adoption of new technologies is a solution, but adoption comes at a sizable opportunity cost, and the requirement for more skilled labor, which is even more of a challenge to find.



"There's a lot of technical expertise that farmers rely on in order to do some of the more sophisticated types of jobs. As farming becomes more and more digitized and equipment becomes more sophisticated, they want folks that have some technical experience. And that can be a bit challenging."

ADMINISTRATIVE BURDEN

ANOTHER INEFFICIENCY IMPEDING OPERATIONAL PROFITABILITY IS **'ADMINISTRATIVE BURDEN'** DEFINED IN THE PRODUCER SURVEY AS:

Time-consuming paperwork for government incentive and risk management programs

Complicated admin due to inefficient land data

Time-consuming data entry and transferring processes for carbon programs

Regulatory cost and inefficiency

During in-depth interviews, this administrative burden was more clearly expressed in terms of the **lack of consolidated access to operational data**. According to the IDC, the average farm generates 500,000 data points daily, a number that is expected to increase 800% by 2036. Whether it be financial, agronomic, or tied to some sort of credit program, modern farming operations produce a plethora of relevant data that is most actionable when multiple data streams are combined. To this point, no informational solutions have answered the call for simplified consolidation.

Frustrated by flawed or incomplete options, many producers have regressed to simple (and time consuming) alternatives such as spreadsheets. One type of data that creates a stumbling block is that related to market opportunity and pricing. Producers lack real-time pricing information which could better inform their selling decisions. Separate research also suggests administrative burden is keeping producers from leveraging value-added opportunities; a University of Vermont study showed nearly a third of farmers forego conservation incentive programs for this reason.



"I use Farmworks, which is so ancient they are out of business, and it hasn't had an update in 8 years. But I still can't find anything to transition all those books, all of that data over to. I'll go back 10 years and say 'What was my biggest expense? What percent was interest in 2013 versus today?' I want the ability to take my 25 years of log data, of log accounting and push it into something new so that I can go forward and continue with that."



TECHNOLOGICAL ADOPTION

THE ISSUE OF TECHNOLOGICAL ADOPTION IS RELATED TO BOTH LABOR ISSUES AND ADMINISTRATIVE BURDEN. THE PRODUCER SURVEY DEFINED 'TECHNOLOGY ADOPTION BARRIERS' AS:

Delays and inconsistencies in financing and adopting new farming tech

Uncertainty about getting a good return on money spent on innovative equipment

Notable barriers to technology are cost and unclear value propositions. There is also a gross lack of industry standardization. For example, the USDA reported that only 42% of Indiana farmers have access to broadband internet - a condition that makes further informational integration nearly impossible.

Unknown or unclear ROI is another factor that impedes adoption. According to McKinsey, producers ultimately expect a 3:1 ROI to adopt a new technology but uncertainty surrounding new offerings make this difficult to estimate. Furthermore, informational limitations within their own operations impede accurate risk assessment. The factors of high cost and uncertainty have led to a situation where only 28% of North American farmers have adopted or plan to adopt precision agriculture technology over the next two years.



"Whatever (new technology) is out there I'm probably going to hear about it and then I'm going to go back to (my business partner) to say, 'This is kind of where this is going.' and then we talk about it. 'Is this something we want to try? Does it make sense?' You know, that sort of thing. It would need to show us a return on dollars and that's how we proceed."

SUMMARY

Indiana producers who participated in both in-depth interviews and an online survey echo similar sentiments regarding the inefficiencies they face in their operations. The primary inefficiency is that of **labor management** and its relationship to the **adoption** of various labor-saving **technologies**. Simply put, finding adequate labor is difficult. While the market has responded to this with a variety of costly technological solutions that reduce labor needs, producers are constantly faced with the strategic decision between investment risk and labor uncertainty. Access to a willing and flexible labor pool is needed in the short term. Looking forward, producers would benefit from a way to accurately assess the costs and benefits of technological adoption.

The ability to **consolidate** a variety of **disparate data** into an organized and easily **accessible interface** would save time while providing producers **clear operational assessment**. Operations' data output has outpaced the management of that data. This causes a considerable burden when coupled with **paperwork** and **regulatory** hoops that must be executed in the name of compliance and/or to receive deserved benefits (credits, etc.). An **integrated information resource** that accurately consolidates and organizes a variety of operational data would help alleviate this pain point. The usefulness of such a tool would be amplified if this informational output were to become universally accepted by a variety of organizations (regulatory, financial, agronomic, etc.). Such a tool could not only save valuable time but could empower producers to make informed and accurate decisions as they consider operational issues of labor and technology.