

# MARKETS FOR DIVERSIFYING AGRICULTURE: CASE STUDIES OF THE US MIDWEST

Synthesis for  
partners and  
stakeholders



Prepared June 2024 by:  
Katherine Pivaral and Linda Prokopy

Department of Horticulture and Landscape Architecture  
Purdue University

## Executive Summary

This study investigates markets for diversified crops like oats, peas, and wheat in the Midwest, employing a case study methodology to identify opportunities, challenges, and success drivers. Engaging a broad range of stakeholders, the research utilizes in-depth data collection to provide comprehensive insights for strategic decision-making in sustainable agricultural diversification.

The findings are structured around key themes: Business Strategy, Operational Aspects, Market and Support, and Environmental Impact. The Business Strategy theme, the most dominant, highlights the critical role of strategic partnerships and collaborations, focusing on connecting farmers to global food supply chains and promoting sustainability. Operational Aspects emphasize the importance of maintaining high product quality and adapting infrastructure to support diversified crops. This includes the need for proper harvesting techniques, modern equipment, and financial support for necessary infrastructure upgrades. The Market and Support theme addresses the challenges farmers face in accessing markets due to insufficient support and knowledge, while also exploring opportunities for market expansion and infrastructure development to improve market access and stabilize prices. The Environmental Impact theme, though less dominant, underscores the importance of sustainable practices like cover crops and conservation methods, highlighting partnerships that promote these practices.

Crop-specific insights reveal that peas enhance soil fertility and reduce input costs, offering new revenue streams through plant-based products, despite initial market skepticism and infrastructure gaps. Wheat's value chain benefits from infrastructure investments and promotes biodiversity, although aligning corporate strategies with sustainable practices remains challenging. Oats present opportunities for optimizing industrial processes and creating new food items, but face technological and logistical barriers. Overall, the study emphasizes stakeholder collaboration, sustainability, economic viability, and innovation as critical factors for successful agricultural diversification in the Midwest.

## 1 Introduction

In the agricultural landscape of the US, the Midwest is well known for its crop productivity, dominated by corn and soybeans. However, evidence suggested that agricultural diversification is an important strategy for resilience and sustainability. This study delves into the markets for diversified crops within the Midwest, focusing on oats, dry peas, and wheat—selected for their potential to complement existing rotations of corn and soybeans.

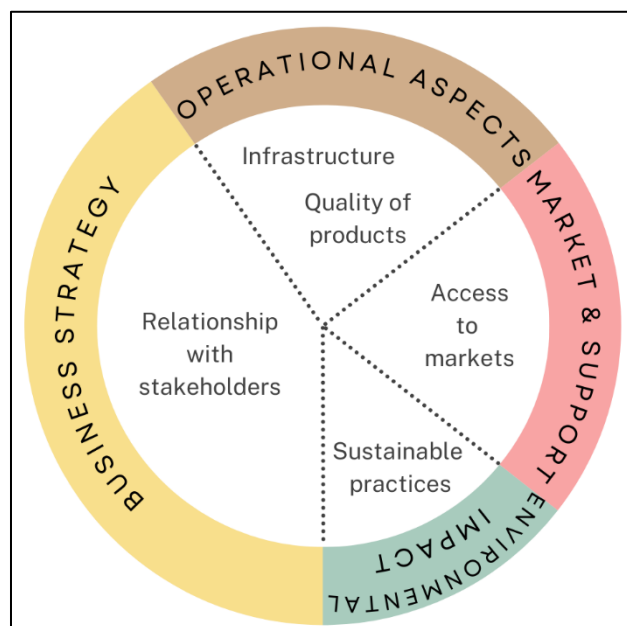
Employing a case study methodology grounded in empirical and contextual inquiry, this research explores the opportunities, challenges, and success drivers in these diversified agricultural markets in the Midwest. By engaging an array of stakeholders—from growers to processors and support organizations along the value chain of each crop—the study provides a comprehensive understanding of diversification strategies. Data collection, including in-depth interviews and supplementary insights from regional field days, enables a nuanced analysis facilitated by NVivo 14 software.

Through this multi-case approach, the study aims to uncover key insights that can inform strategic decisions for sustainable agricultural diversification in the Midwest, contributing to both economic viability and environmental stewardship in the region.

## 2 What We Learned

Our findings highlight key themes and subthemes impacting agricultural diversification in the Midwest. These themes provide a conceptual framework that reveal the critical factors shaping the incorporation of oats, peas, and wheat value chain in the highly specialized Midwestern agricultural systems.

Figure 3.1 illustrates the key themes including Business Strategy, Operational Aspects, Markets and Support, and Environmental Impact. The thematic framework highlights the complex nature of the value chain, offering insights into stakeholders' diverse priorities and challenges across various dimensions.



*Figure 1.1. Key themes and corresponding main subthemes. The size of each pie slice represents the relevance of the theme.*

## **2.1 Business Strategy**

Business Strategy was the most dominant theme. It emphasizes the intricate collaborations among stakeholders, focusing on how they formulate and execute business strategies, engage with each other, and address marketability and competition. Strategic partnerships illustrate investments and access gained through collaborations in sustainability and regenerative agriculture programs. A central aspect is connecting farmers to the global food supply chain, integrating them beyond commodity transactions, and supporting their success in the agricultural landscape. For all three crops, the main business strategy was to empower farmers and support local communities by shifting focus from crops sold into commodity markets to crops destined for value-added food-grade markets. Successful strategies included strategic partnership, farmer integration, and community support.

## **2.2 Operational Aspects**

Operational Aspects include day-to-day logistics and activities. The most important concerns were Product Quality and Infrastructure. "Product Quality" issues address maintaining high-quality outputs, overcoming challenges, and correcting misconceptions about established products. For example, farmers face the challenge of maintaining the quality of food-grade oats. For instance, high moisture content in harvested grains can lead to quality deterioration, which affects the marketability of the produce. Farmers can achieve high quality by using proper harvesting techniques and modern equipment. Also, they could overcome quality challenges by receiving education and training on best practices for crop quality management, engaging with other stakeholders to get access to shared resources and knowledge, or seek financial assistance for purchasing quality-engaging equipment and accessing technical support. Product quality, such as reaching physical and sensory attributes, nutritional quality, and safety, are pivotal in decision-making processes, reflecting its importance across the oats, peas, and wheat value chain.

"Infrastructure" focuses on planting and utilizing harvesting equipment, emphasizing the adaptability of tools initially designed for other crops to streamline processes for diversified farming. Essential support includes financial assistance through grants and subsidies from both government and private sectors, aiding farmers in purchasing or upgrading equipment. Technical support is also crucial, with funding for research and development aimed at innovating and enhancing equipment tailored to the unique requirements of diversified crops. Furthermore, training and education provided by Extension services are vital to help farmers transition to new equipment and diversified cropping systems. The discussion also highlights the need for increased storage capacity, addressing the growing demand for enhanced grain storage to support diversified crops.

The infrastructure subtheme also encompasses social infrastructure, emphasizing collaborations between farmers and organizations. This collaboration is crucial for knowledge sharing, technical assistance, access to shared resources and equipment, and market development through marketing, branding, and supply chain integration. Forming organizations can also enhance policy advocacy, enabling groups to push for supportive policies such as subsidies, tax breaks, and research funding.

Supporting and building relationships can be achieved by promoting funding for collaborative projects, strengthening existing farmer networks, and integrating organizations into these networks. Implementing shared databases allows farmers and organizations to input and access data on crop performance, market trends, and best practices. Private companies can contribute by investing in collaborative ventures, providing funding, technical expertise, and market access. NGOs can facilitate partnerships by offering mediation services, organizing collaborative projects, and providing training and resources.

These insights illustrate the operational intricacies within the value chain, emphasizing the importance of product quality and adaptable infrastructure in promoting agricultural diversification and optimizing efficiency in the Midwest.

### **2.3 Market and Support**

The Markets and Support theme focuses on consumer connection and market responsiveness, with "Access to Markets" as its core subtheme. This theme underscores the challenges farmers encounter in accessing markets for oats, peas, and wheat, exacerbated by insufficient support and knowledge from both private and public sectors. There is a noticeable absence of a comprehensive knowledge base and institutional backing for cultivating these diversified crops. As a result, farmers often lack essential information and guidance on optimal practices, crop management, and market strategies crucial for successful agricultural diversification.

Existing market players, including those within the supply chain and commodity markets, frequently exhibit reluctance to embrace change. This resistance often stems from a preference to maintain the status quo, hindering the innovation and adaptation necessary to integrate diversified crops into the mainstream market effectively.

Discussions also explored opportunities for market expansion and infrastructure development, including plans to construct new mills to meet growing demand. For farmers, this will significantly impact market access by increasing demand, stabilizing prices, reducing post-harvest losses, encouraging diversification of plantings, and opening up opportunities for value-added products. For buyers, new mills could ensure a reliable supply, a variety of products, improved product quality, competitive pricing, enhanced traceability, transparency, and consumer confidence. These insights underscore the complexities involved in enhancing market access and highlight their critical role in the oats, peas, and wheat value chain in the US Midwest.

### **2.4 Environmental Impact**

The Environmental Impact theme was the least dominant theme. It predominantly focuses on "Sustainable Practices," highlighting the integration of cover crops and conservation methods to enhance farm sustainability. Additionally, it emphasizes the importance of environmental metrics, which facilitate access to premium markets that value sustainability. Buyer programs that offer incentives and premiums to farmers committed to sustainable practices can also support diverse crops. Collaborations between organizations promote these practices through various incentive programs. Overall, the theme underscores the growing importance of

environmentally conscious approaches within the agricultural value chain, providing insights into the evolving landscape of sustainable practices in oats, peas, and wheat cultivation in the US Midwest.

### 3 Key Takeaways by Crop

#### 3.1 Pea's Value Chain

##### Key Findings

##### Environmental:

- The nitrogen-fixing ability of peas significantly enhances soil fertility, reducing the need for synthetic nitrogen fertilizers. This contributes to improved soil structure, increased organic matter, and better water retention, which collectively enhance overall soil health.

##### Economic:

- Peas help in reducing input costs, improving crop yields, and enhancing overall profitability. Farmers have reported substantial cost savings by reducing reliance on external fertilizers.
- The growth of the pea industry, particularly in plant-based products, opens new revenue streams. Corporates like PURIS Foods benefit from the expanding market for pea-based proteins, which supports their financial growth and sustainability goals.

##### Social:

- The inclusion of peas in crop rotations can improve food security and livelihoods by increasing farm productivity and profitability. Additionally, the reduced need for chemical inputs can improve community health and environmental quality.

##### Barriers

##### For Corporate:

- Initial skepticism and the absence of robust market demand are significant barriers. The unpredictability of agricultural outcomes and lack of adequate infrastructure also pose challenges.
- Lack of support from universities and extension programs is a noted challenge, indicating a need for better policy and institutional support.
- Gaps in infrastructure and the need for innovative solutions to scale production and meet market demands are highlighted as significant barriers.

##### For Producers:

- Producers face financial, technical, and logistical barriers in adopting diversified cropping systems. These include the initial costs of transitioning to new crops and the need for technical knowledge and infrastructure.

##### Opportunities

##### Market Opportunities:

- The expansion of plant-based protein markets presents significant opportunities for the pea industry. Innovations in product development and strategic market positioning are key to capitalizing on these opportunities.

## 3.2 Wheat's Value Chain

### Key Findings

#### Environmental:

- Farmers' adoption of sustainable practices positively impacts the environment, particularly through soil health improvement and promoting biodiversity.

#### Economic:

- Collaboration with various stakeholders, including cooperatives and NGOs, enhances market access and operational efficiency.
- Infrastructure investments, such as the construction of mills, improve market access and meet the demand for wheat.
- Investments in infrastructure and sustainability programs support long-term operational efficiency and market demand.

#### Social:

- Enhanced stakeholder relationships foster community benefits, improve food security, and support farmers' livelihoods through better market access and sustainable practices.

### Barriers

#### For Corporates:

- Challenges include aligning corporate strategies with sustainable practices and integrating new crops into existing supply chains.
- Emphasis on collaborative models and education initiatives to mitigate resistance and promote innovative practices.
- Identified gaps in knowledge and technology that require targeted education and investment in infrastructure.

#### For Producers:

- Financial constraints, technical challenges, and logistical issues in adopting diversified cropping systems.
- The need for policies that support sustainable practices and provide incentives for diversification.

### Opportunities

#### Market Opportunities:

- Collaboration with cooperatives and NGOs creates market opportunities by enhancing sustainability and operational efficiency.
- Promote collaborative models and sustainability programs that align with market demands and environmental goals.
- Provide technical assistance, financial incentives, and invest in infrastructure to support sustainable practices and market access.

## 3.3 Oat's Value Chain

### Key Findings

#### Economic:

- Integration of oats into the production system can optimize industrial baking processes and potentially create novel food items.

- The shift from using oats for animal feed to food and industrial purposes could increase market opportunities and revenue streams for producers.
- Corporates like Oatly, which focus on oat-based products, benefit from the growing market demand for oat-based foods and beverages.
- The resurgence of oats and the interest in oat-based products illustrate the potential benefits of crop diversification, enhancing economic sustainability for both producers and corporate.

#### Social:

- The collaboration between different agricultural players, including Grain Millers, Practical Farmers of Iowa, and oat growers, supports community benefits and the economic well-being of the region's agricultural community.

#### Barriers

##### For Corporates:

- Issues like associations between Fusarium species and mycotoxins are technological challenges that need addressing in the oat processing industry.

##### For Producers:

- The transition from using oats for animal feed to human food and industrial uses may present logistical and cultural challenges for producers.

#### Opportunities

##### Market Opportunities:

- Growing interest and investment in oat-based products and their potential health benefits offer significant market opportunities.
- Collaborations among processors, farmers, and companies focusing on oat-based products are essential for integrating oats into the production system effectively.
- Engagement of organizations like Practical Farmers of Iowa provides support through sustainable agricultural practices and farmer collaboration.

### 3.4 Summary of the Case Studies: Peas, Wheat, and Oats

This table summarizes the opportunities, challenges, and drivers of success of the case studies.

Opportunities	Challenges	Drivers of Success
Stakeholder collaboration Sustainability focus Soil health Economic viability Access to premium market Market development Diversified income Traceability and transparency	Scalability Infrastructure Competitive Landscape Lack of support from government, universities, and private entities Market trends Quality issues Agronomic challenges	Innovation Market access Collaborative partnership Restoring knowledge for cultivating food-grade crops and integrating them into current production systems.



## 4 Take-home Message

- Policy Makers
  - Supportive Policies: Develop policies that support physical infrastructure improvements, provide financial incentives for diversification, and facilitate market access.
  - Funding and Grants: Increase funding for research on diversified crops and provide grants for innovative agricultural practices.
- Farmers
  - Adopt Innovative Practices: Embrace new technologies and crop varieties to enhance productivity and sustainability.
  - Collaborative Efforts: Engage social infrastructures through networks to share knowledge, resources, and market access.
- Buyers
  - Market Development: Invest in market development and branding for diversified crops to create premium market opportunities.
  - Sustainable Practices: Focus on sustainability in production processes to meet consumer demands and regulatory standards.
- Research and Academia
  - Interdisciplinary Research: Conduct interdisciplinary research to address the multifaceted challenges of agricultural diversification, focusing on other crops (i.e., horticultural crops, agroforestry, livestock).
  - Applied Research: conduct applied research to determine optimal practices for achieving desired quality and integrating these crops into existing rotations. Consider prioritizing breeding efforts for developing improved varieties to address these needs.
  - Extension Services: Strengthen Extension services to provide farmers with the latest research findings and practical advice.
- Non-Profit Organizations
  - Advocacy and Support: Advocate for diversified agriculture and provide support services to farmers and other stakeholders.
  - Education and Training: Offer education and training programs to help farmers adopt sustainable and diversified agricultural practices. (Pivaral, 2024)

## 5 References

Pivaral, K. O. (2024). *Markets for Diversifying Agriculture: Case Studies of the U.S Midwest* [Thesis, Purdue University Graduate School]. <https://doi.org/10.25394/PGS.26107375.v1>

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## Contact

[www.DiverseCornBelt.com](http://www.DiverseCornBelt.com)

For more information contact:

- Project Director, Linda Prokopy at [lprokopy@purdue.edu](mailto:lprokopy@purdue.edu)
- Project Manager, Emily Usher at [eusher@purdue.edu](mailto:eusher@purdue.edu)

