THE DIVERSE CORN BELT PROJECT: YEAR 3 HIGHLIGHTS

DIVERSE CORN BELT PROJECT

After decades of corn-soybean rotations, American farmers have become extremely efficient producers of both commodities. A strong corn-soybean culture has shaped agronomics, infrastructure, and policy throughout the Corn Belt. Though yields have grown and economics generally reward farmers for specializing, concerns exist about possible long-term impacts of a limited rotation on economic returns, communities, and the environment—in short, limiting the ecological and economic resilience of Corn Belt farms.

Resilience in biological systems improves with diversity. The same can be said for economic and social resilience. The Diverse Corn Belt (DCB) project is exploring the hypothesis that diversifying crop production and markets will generate an array of economic, social, and ecosystem services that will benefit more people than the current corn-soybean/confined livestock system.

More than 30 collaborators, representing a wide range of institutions and disciplines, are helping DCB develop concrete, viable, evidence-based frameworks that can guide the Midwest to a more diversified agricultural system at the farm, market, and landscape scale.

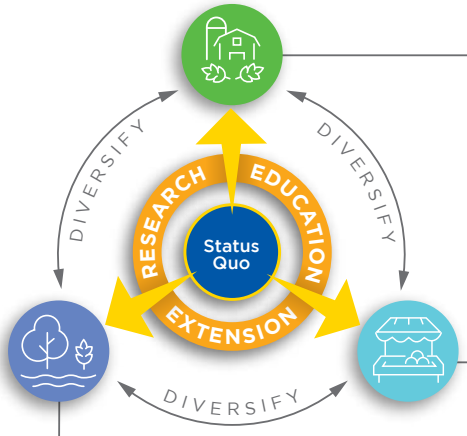
DIVERSITY ON MANY LEVELS

The Diverse Corn Belt project explores diversity on several levels:

Farm-level diversity, including more options for crop rotations, perennial crops for forage or bioenergy, grazing livestock, agroforestry and horticultural food crops.

Market-level diversity, creating channels for processing and marketing a wider variety of agricultural products and meeting the needs of diverse people all along the value chain.

Landscape-level diversity, a wide-scale proliferation of profitable, resilient, climate-smart farming systems that achieve yield, ecosystem and equity goals.



FARM LEVEL

Incorporating the following into the system:

- Small grains and/or forage crops in rotations
- Perennial forage or bioenergy crops
- Agroforestry
- Horticultural food crops
- Grazed livestock

MARKET LEVEL

- Diversity of markets for both producers and consumers
- Needs of diverse people along the value chain are met

LANDSCAPE LEVEL

- Wide-scale adoption of alternative farming systems that are climate-smart, reach profit and yield goals and ecosystem services goals
- Ensure these systems and services are equitably distributed

MULTI-YEAR, MULTI-DISCIPLINARY

The Diverse Corn Belt project is a five-year, multi-disciplinary effort launched in 2021. By the project's end in 2026, the research and outreach teams plan to have data and analysis available for stakeholders, policy makers, and the general public. After two years of planning, study design, and research start-up, team members gathered data and began publishing results in 2023-2024.

DCB's investigators are studying the real-world impacts of diversified farming systems on a wide range of factors from crop production to soil health, economic returns, social networks and communities, infrastructure and policy decisions, and more.

Studies range from trials on cooperators' farms to surveys, group and one-to-one dialogues, modeling, and more. By the end of the project, the group will better understand the opportunities presented by diversification at the farm, market, and landscape levels.

Because DCB findings are designed to help guide good decision making at all levels, the researchers are exploring not only the impacts of broader rotations—including horticultural food crops and agroforestry—and the introduction of more grazing livestock to the Corn Belt landscape, but also the constraints and challenges that currently make diversification difficult. In all, the scope addressed by the research and modeling is extremely broad, and should yield insights from the perspective of a wide range of stakeholders.

THE DCB TEAM

The DCB team includes more than 30 partners, including specialists in:

- Agronomy
- Communications
- Economics
- Education
- Entomology
- Extension
- Hydrology
- Marketing
- Statistics and modeling
- Social sciences
- Soil science, and other disciplines

Meet the team on our ***diversecornbelt.org*** *website.*

DCB OBJECTIVES

The Diverse Corn Belt Project aims to develop scientifically and ethically sound visions for Midwest agriculture based on data gathering and modeling across a wide range of disciplines. The process emphasizes co-production, a teamwork approach to posing questions and finding answers that includes stakeholders throughout the value chain.

The program will yield a suite of economic, social and ecosystem services that will benefit more people than the current system built on corn-soybean rotations and confined livestock.

The Diverse Corn Belt Program's objectives include:

1. ***Identifying and addressing social, economic, agronomic and environmental barriers*** to adopting diverse agricultural systems through stakeholder engagement, on-farm research, and economic analysis.

"We're living in a day and age of technology and market access and market awareness that... really gives us more opportunities than what we had in the past."
- DIVERSIFIED FARMER

2. ***Modeling economic and ecosystem impacts of diversity*** with data from in-field research, interviews, and surveys. DCB models will help guide evidence-based policy recommendations, quantify sustainability metrics and establish the conditions required for economic vitality.
3. ***Working with stakeholders to design alternative production systems*** through interviews, focus groups and RAD (Reimagining Agricultural Diversity) Team meetings.
4. ***Developing and sharing policy guidance*** that can help communities achieve resilient intensification through diversified farms, landscapes and markets.

"If there is a market for whatever we're talking about growing, whatever we're going to diversify to...we're farmers, we'll figure out a way to make it work. We just want to make sure that we have a chance of profitability before we plant it."
- LESS DIVERSIFIED FARMER

5. ***Supporting farm diversification and market development*** by engaging with diverse stakeholders across the supply chain.
6. ***Creating, piloting and publishing educational materials at high school and undergraduate levels*** that prepare the workforce to respond to emerging challenges and support a diversified landscape.

"A lot of farmers get focused on the target of bushels per acre versus their net dollars per acre. So many of them are consumed with trying to hit 300-bushel corn or 100-bushel beans. It doesn't matter how many inputs they have to do or use to get that."
– LESS-DIVERSIFIED FARMER

CO-PRODUCTION PROCESS

One of the most exciting elements of the DCB project is that every step in the research and every element of study can influence other researchers' efforts. In short, DCB employs a co-production process, in which stakeholders and participants influence the direction of the research and help develop questions that guide the research.

Together, the research teams work toward answering questions and exploring concerns raised by stakeholders during the process. Stakeholders include farmers, advisors, agricultural retailers, commodity buyers, processors, grocers, civic leaders and more.

As a result, insights provided by DCB focus groups inspired discussions among Reimagining Agricultural Diversity (RAD) Teams and contributed to surveys of consumers, processors and retailers. Maps of diversification hotspots were used to stimulate discussion in RAD Team meetings. Similarly, data collected by the In-Field team can be presented to future focus groups and RAD Team members for their reaction and feedback.

KEY ACCOMPLISHMENTS:
DCB BY THE NUMBERS

After extensive planning, coordination and groundwork, data and publications are beginning to emerge from DCB research teams.

Here's a summary of our Year 3 accomplishments:

OBJECTIVE 1: Co-produce research and advance market development along the agricultural value chain to identify and address social, economic, agronomic, and environmental barriers to the adoption of diverse sustainable agricultural systems.

- 6 Reimagining Agricultural Diversity (RAD) Team meetings in Illinois, Indiana, and Iowa hosting 154 participants, including farmers, advisors, non-farming landowners, and decision-makers.
- 4 drivers identified to assess regenerative farming activity levels: tillage, crop density/cover crop intensity, pasture use, small grains in rotations.
- 200+ samples from 31 farms analyzed.
- 18 fields under a range of management practices sampled for soil biological health; 360 sample points' soils analyzed for key physical and chemical properties.
- 3 rounds of groundwater samples collected from 22 wells.
- 25 on-farm surveys of weeds, pests and beneficial insects; 520 pitfall traps identified 68 ground beetle and ant species.
- 4 stakeholder surveys of food wholesalers, restauranteurs, winery staffs, and retailers completed.
- 100+ climate funder representatives watched panel discussion at the Conference on Building an Intersectional Philanthropic Approach.
- 32 interviews with diversified farmers and survey of 725 Iowa, Illinois, and Indiana farmers completed.
- 360 sample points' soils analyzed for key physical and chemical properties.

OBJECTIVE 2: Model economic and ecosystem impacts of diverse landscape scenarios across the agricultural value chain to develop evidence-based policy recommendations, quantify sustainability metrics, and establish conditions required for economic vitality.

- 1 collaborative geo-design decision support tool framework developed to facilitate stakeholder engagement in future visioning exercises.
- 3 hotspot/cold-spot farm-level diversity maps created, identifying areas of greater and lower diversification in Indiana, Illinois, and Iowa and guiding discussion in RAD Team meetings.

OBJECTIVE 3: Design stakeholder-informed alternative production systems by conducting visioning sessions at the local, state, and national levels that allow participants to consider ethical choices and sustainability outcomes.

- 6 weeks of popular press sources monitored to identify dominant trends influencing agriculture's future in the Corn Belt and present visions of the future environment for diversification.
- 1 peer-reviewed paper underway to share visioning exercise results.
- Feedback from RAD Team meetings applied to guide visioning sessions and development of alternative production systems.

OBJECTIVE 4: Develop and disseminate policy guidance to achieve resilient intensification through diversified farms, landscapes, and markets.

- DCB researchers are exploring policy opportunities and collaborating with policy advocates to develop stakeholder-informed recommendations to promote a more diverse and resilient agricultural landscape in the Corn Belt.
- The DCB team is meeting with members of other Sustainable Agricultural Systems Coordinated Agricultural Projects (SAS-CAP) to leverage collective knowledge and resources, strengthening the impact of shared policy recommendations and outcomes.

OBJECTIVE 5: Engage with diverse stakeholders through Extension to support farm diversification and market development.

- 292 attendees reached at the 2024 Practical Farmers of Iowa Annual Conference.
- 439 individuals reached by 5 DCB presentations at the Midwest Covers and Grains Conference.
- 249 attendees at 6 DCB field days.
- 167 participants in 7 Diversified Rotation Farmer Network calls.
- DCB team members are developing modules on pesticide label restrictions on forage and rotation crops for Extension pesticide applicator recertification programs.

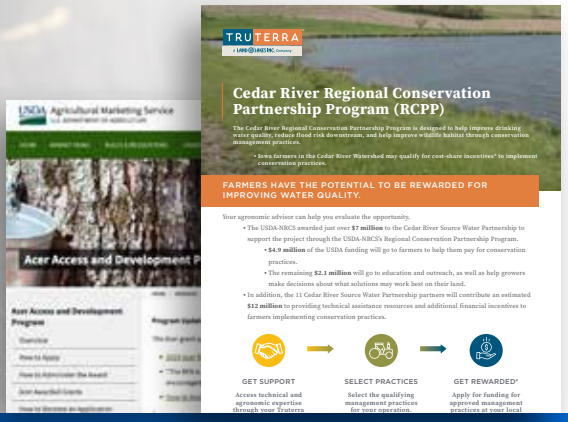
OBJECTIVE 6: Create, pilot, and publish educational materials to foster a workforce prepared to respond to emerging challenges and support a diversified landscape.

- 5 educational modules drafted, covering ecological, agricultural, human, and economic diversity.
- 3 connecting units (systems thinking, changing minds, principles of sustainability) in development to link and contextualize diversity units.
- Educational modules adapted for high school students.
- 25 National University of Singapore students participated in DCB field day.

GET INVOLVED

The DCB team seeks a wide range of perspectives from stakeholders throughout Indiana, Illinois and Iowa. Please contact Emily Usher (**eusher@purdue.edu**) if you are willing to help shape the future of the Corn Belt.

For more information on the Diverse Corn Belt project, visit **diversecornbelt.org**. For detailed annual reports submitted to the USDA National Institute of Food and Agriculture, contact Emily Usher, project manager, at **eusher@purdue.edu**.



ARTICLES AVAILABLE

Year 3 of the DCB project also yielded dozens of papers, presentations, and articles. Click here or scan the QR code to find a list of publications at **diversecornbelt.org**.

THANKS TO OUR COLLABORATORS

PURDUE UNIVERSITY

CTIC Conservation Technology Information Center

USDA ERS

IOWA STATE UNIVERSITY

American Society of Agronomy

ILLINOIS STATE UNIVERSITY

FOREST SERVICE US DEPARTMENT OF AGRICULTURE

THE UNIVERSITY OF IOWA

UNIVERSITY OF WISCONSIN PLATTEVILLE SCHOOL OF AGRICULTURE

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

The Nature Conservancy

MONTANA STATE UNIVERSITY

PRACTICAL FARMERS of Iowa

UNIVERSITY OF MINNESOTA

WISCONSIN UNIVERSITY OF WISCONSIN–MADISON

"In my county by crop insurance standards, you can't physically grow small grains. You can't physically grow popcorn. You can't physically grow vegetables because none of these things are insurable.... But as soon as you cross the county line, it's totally possible to grow these things, and you can get insurance...And there's so many hurdles in getting something to be insurable, nobody bothers with it. It takes years of data to do."

– DIVERSIFIED FARMER

LEARN MORE AT

DIVERSECORNBELT.ORG

This research is supported by Agriculture and Food Research Initiative Competitive Grant 2021-68012-35896 from the USDA National Institute of Food and Agriculture.