

Regenerative Agriculture

THE CHALLENGES AND THE OPPORTUNITIES

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REGENERATIVE AGRICULTURE IS A BROAD TERM THAT CAN BE INTERPRETED IN MANY WAYS. A SYSTEM APPROACH, CONSIDERING PROCESSES AND OUTCOMES, SEEMS TO BE THE MOST ACCEPTED

Even though there is no consensus on the definition of Regenerative Agriculture, most definitions are focused either on **processes, outcomes, or both**.

Processes can be related to:

- Cover cropping
- Rotational grazing
- Tillage: low or no-till farming
- Water retention
- Use of natural pesticides and fertilizers
- Crop rotations
- Carbon sequestration
- Habitat creation for pollinators
- Efficient nutrient management and much more

Outcomes can be:

- Improve soil health
- Increase carbon sequestration
- Increase biodiversity
- Improve water health
- Improve the social/economic well-being of communities

Some other terms are commonly used synonymously with, or adjacently to, the term **“regenerative agriculture”**, such as: **“agroecological farming,” “alternative agriculture,” “biodynamic agriculture,” “carbon farming,” “nature inclusive farming,” “conservation agriculture,” “green agriculture,” “organic regenerative agriculture,”** and **“sustainable agriculture.”**

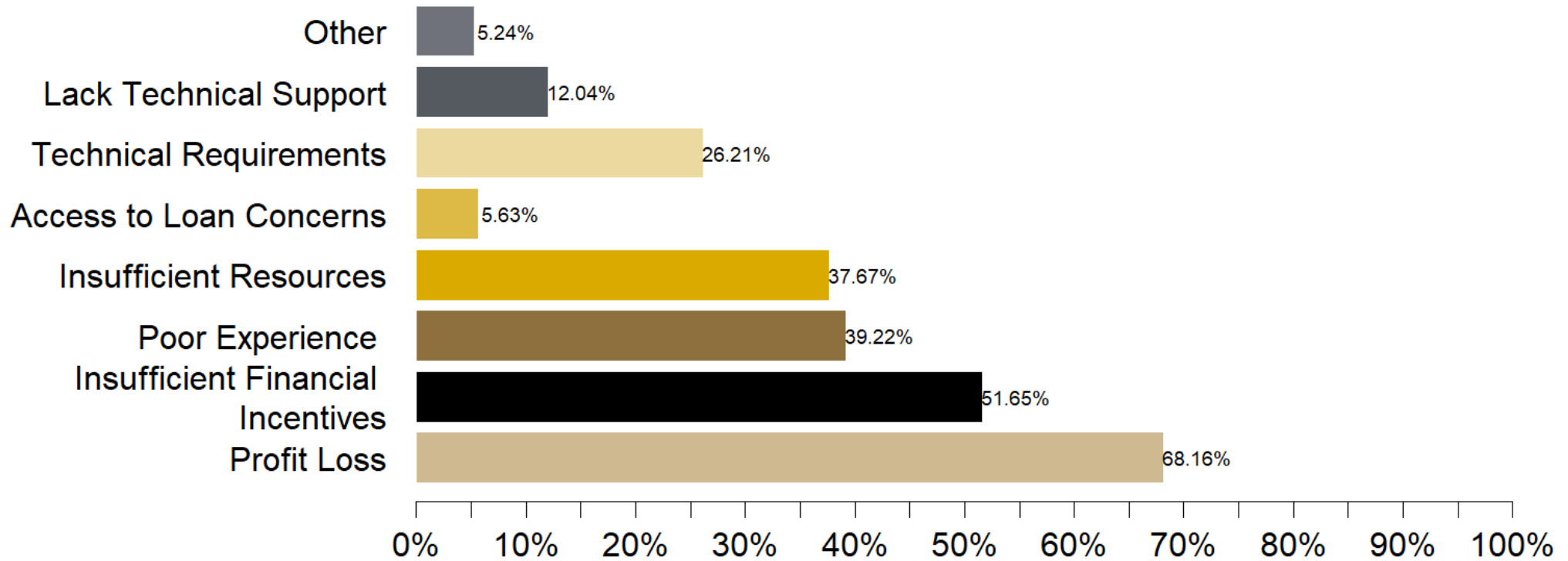


Regenerative Agriculture

The Farmer Perspective

THE BIGGEST BARRIERS TO CONSERVATION PRACTICES ADOPTION ARE RELATED TO THE FEAR OF PROFIT LOSS AND LACK OF FINANCIAL INCENTIVES

Reasons for Not Adopting Conservation

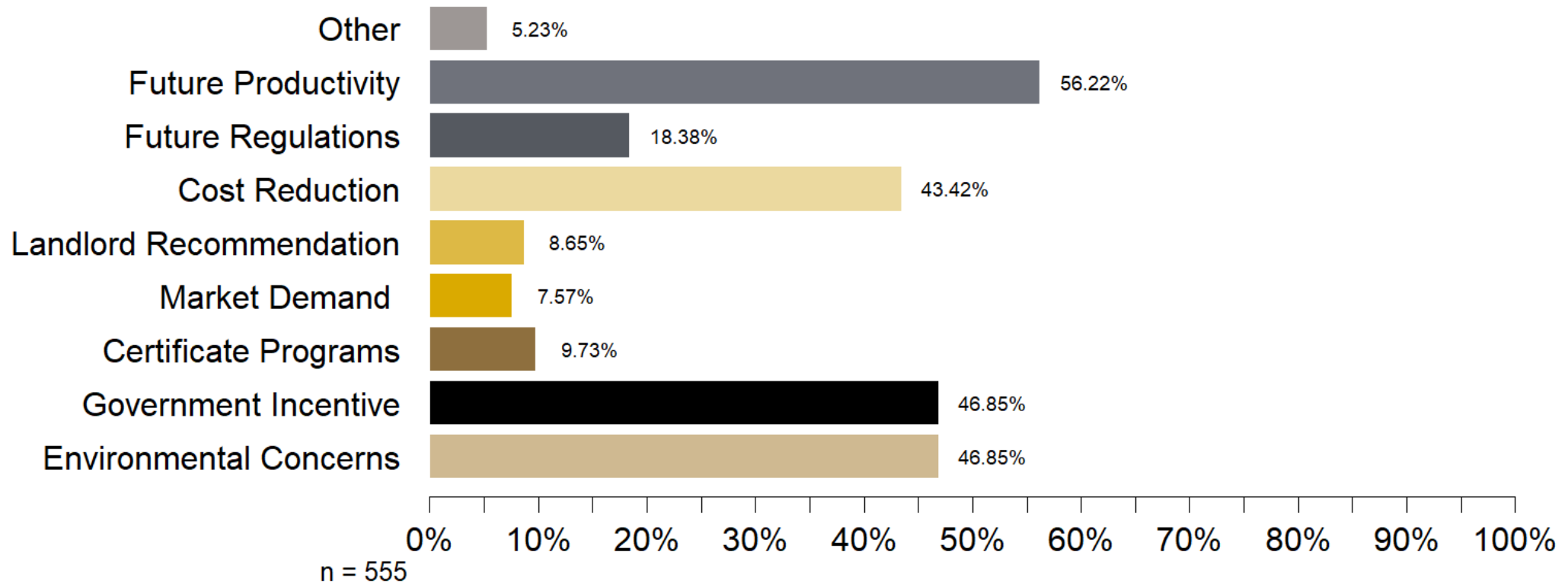


n = 513

Of those farmers that indicated they chose not to adopt a conservation practice.

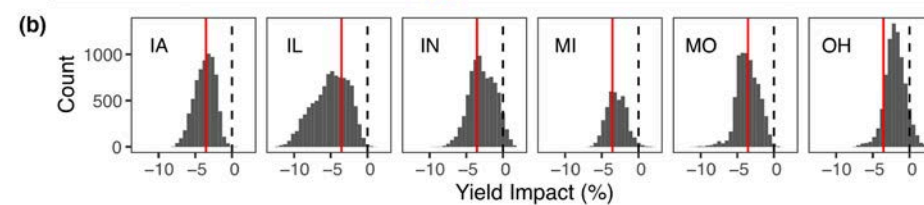
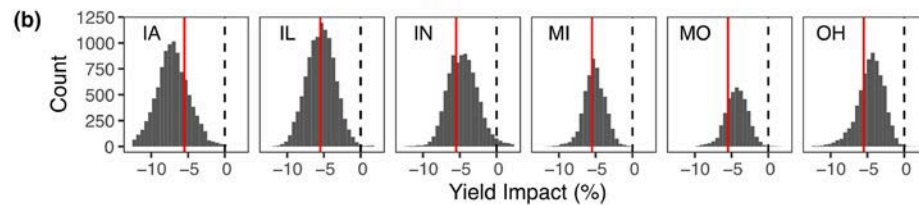
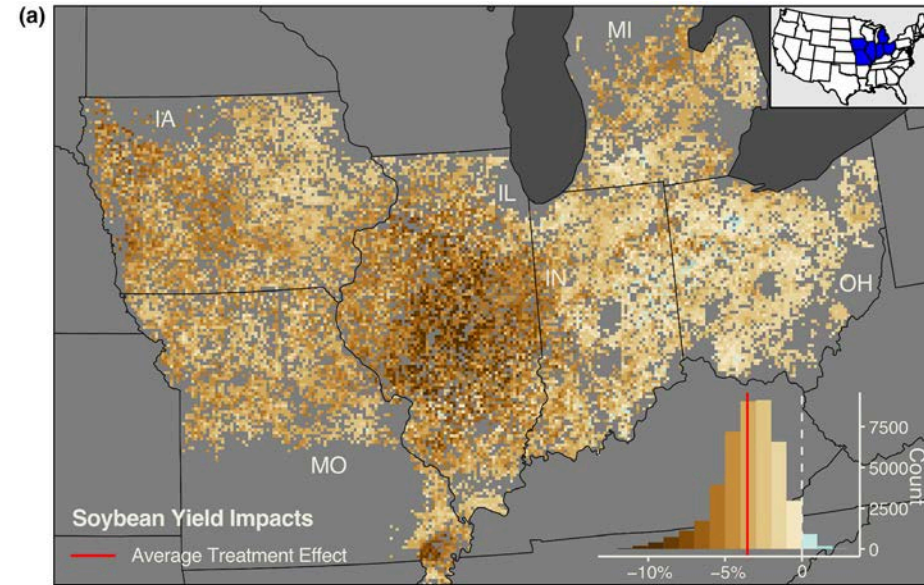
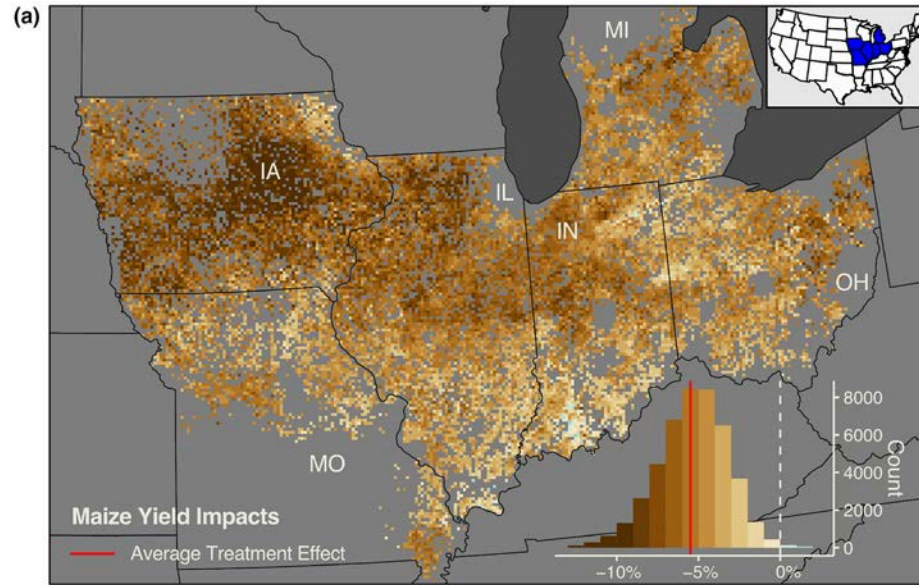
THE MOST RELEVANT FACTORS THAT LEAD TO CONSERVATION PRACTICES ADOPTION ARE RELATED TO EXPECTATIONS OF FUTURE PRODUCTIVITY GAINS, ENVIRONMENTAL CONCERNS AND GOVERNMENT INCENTIVES

Reasons for Adopting Conservation



Of those farmers that indicated they chose to adopt a conservation practice.

THE ADOPTION OF COVER CROPS CAN AFFECT YIELDS AND FARM PROFITABILITY. BETWEEN 2019 AND 2020, AREAS WITH COVER CROPS IN THE CORN BELT HAD 5.5% LOWER YIELDS ON CORN AND 3.5% LOWER YIELDS ON SOYBEAN ACRES.



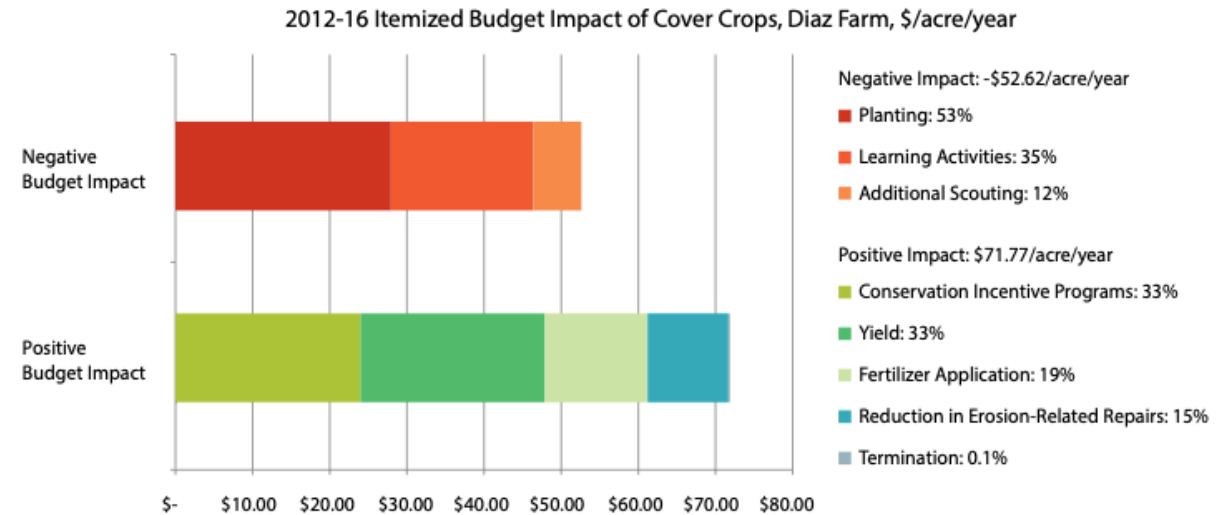
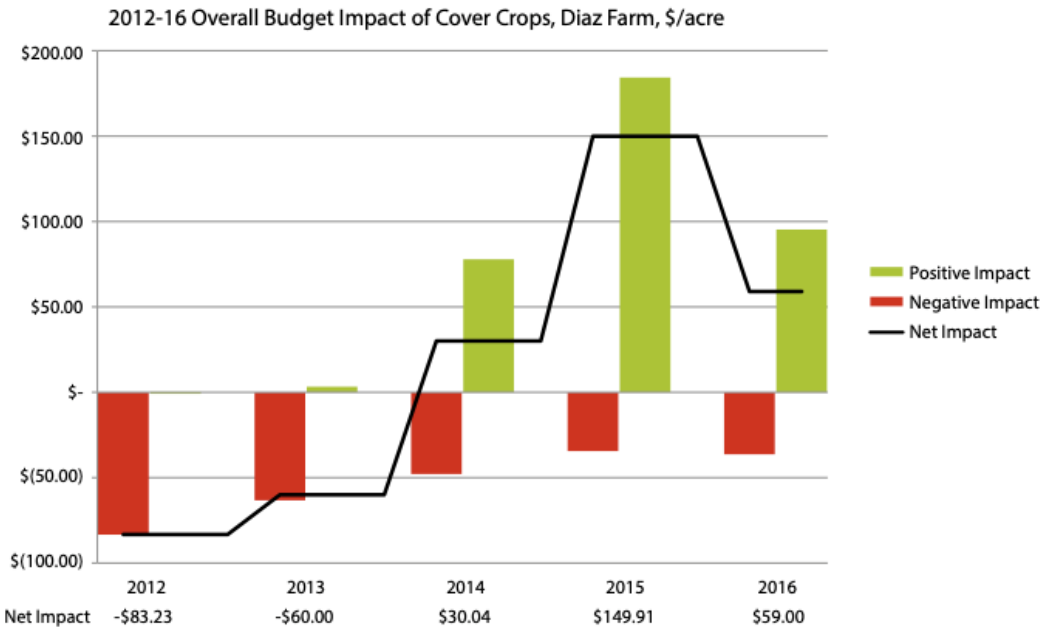
Study Takeaways:

- There was a 5.5% reduction in corn yields and a 3.5% in soybean yields in areas in the corn belt (2019 - 2020)
- The most negative impacts were observed on the better soils
- Nearly all locations appeared to experience negative effects, with only 0.6% of observations estimated to have a positive impact
- Potential problems are related to effects of cover crops on nitrogen dynamics, water consumption, and soil oxygen depletion

DIAZ FARM CASE STUDY – COVER CROPS CREATED A NEGATIVE FINANCIAL IMPACT IN THE INITIAL YEARS. CONSERVATION INCENTIVE PROGRAMS WERE FUNDAMENTAL TO OFFSET THIS COST. YIELD INCREASES AND FERTILIZER REDUCTION CAME IN LATER YEARS

Stephenson County, Illinois

Average winter 22°F • Average summer 70°F • Average annual precipitation 38 inches • 25 acres of row crops • Corn-soybean rotation • Gentle rolling terrain with slopes ranging from 3% to 5%, whole farm classified as highly erodible areas, silt loam soil • 26 years of no-till, 5 years of cover crops



Note: The yearly income analysis in this case study does not include incentives from conservation programs; however, these incentives did have a positive impact on the Diaz Farm's budget, as shown here. Percentages may not add up to 100% due to rounding.

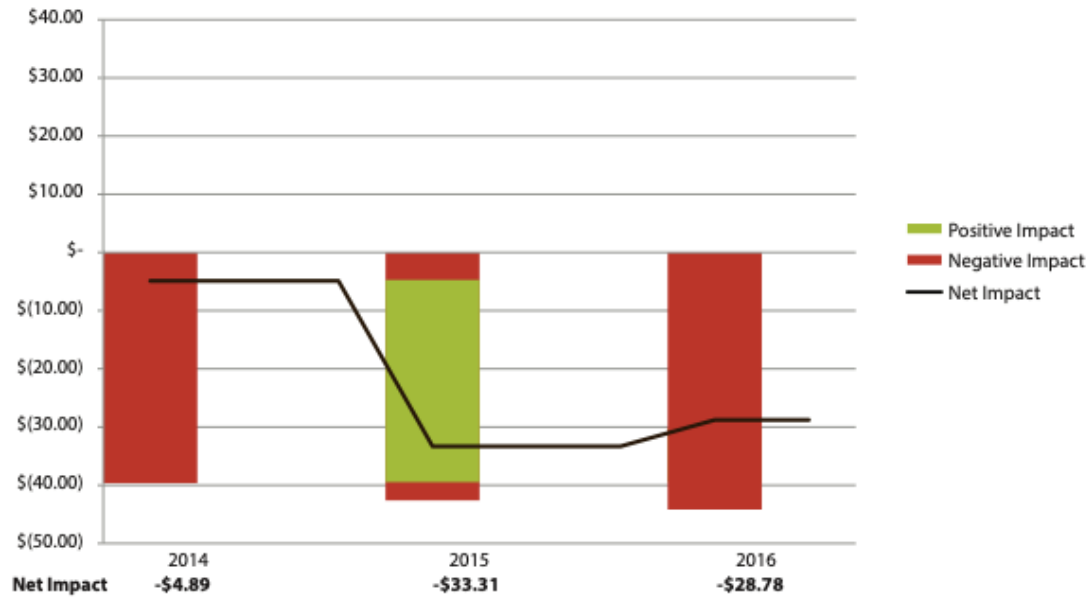
Note: The yearly income analysis in this case study does not include incentives from conservation programs; however, these incentives did have a positive impact on the Diaz Farm's budget, as shown here.

MOORE FARM CASE STUDY – COVER CROP OPERATION TOGETHER WITH PARTICIPATION IN CONSERVATION INCENTIVE PROGRAMS LED TO AN AVERAGE ANNUAL NEGATIVE BUDGET NET IMPACT OF **-\$22.33 PER ACRE.**

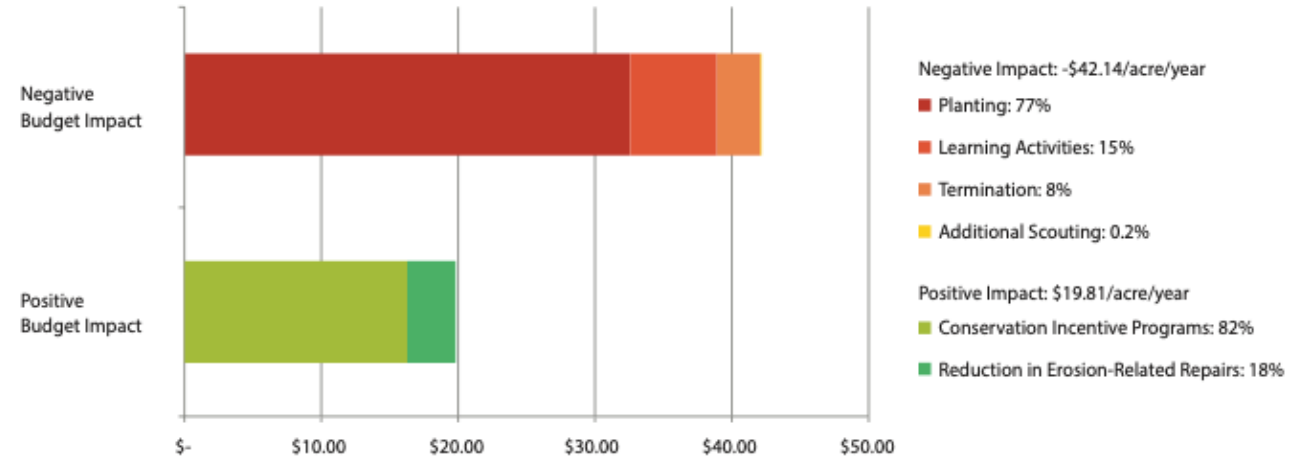
Howard County, Iowa

Average winter 17° F • Average summer 70° F • Average annual precipitation 40 inches • 2,300 acres of row crops • Corn-soybean rotation • Mostly loam soil, generally slopes of 2-5% with a few areas of 4-7% • 25 years of no-till, 3 years of cover crops

2014-16 Overall Budget Impact of Cover Crops on Three Moore Fields, \$/acre



2014-16 Itemized Budget Impact of Cover Crops on Three Moore Fields, \$/acre/year



Note: The yearly income analysis in this case study does not include incentives from conservation programs; however, these incentives did have a positive impact on the Moore Farm's budget, as shown here. Percentages may not add up to 100% due to rounding.

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Agrifood Companies' Perspective

CLIMATE COMMITMENTS ARE A NORM FOR COMPANIES IN THE AGRIFOOD CHAIN. BUT THEY LOOK DIFFERENT NOW THAN WHEN THEY WERE MADE

- "More than 9,000 companies, over 1000 cities, more than 1000 educational institutions, and over 600 financial institutions have joined the Race to Zero, pledging to take rigorous, immediate action to halve global emissions by 2030;" (United Nations, 2023).
- Growing focus on Scope 3 emissions – but carbon is not the only variable
- Growing pressure from shareholders – Greenwashing has become a problem for companies
- Unlikely that sustainability promises will be fulfilled by companies – 2030 is not that far away anymore

MANY COMPANIES MADE BOLD PUBLIC CLIMATE COMMITMENTS. IT SEEMS UNLIKELY THAT THESE ARE GOING TO BE MET

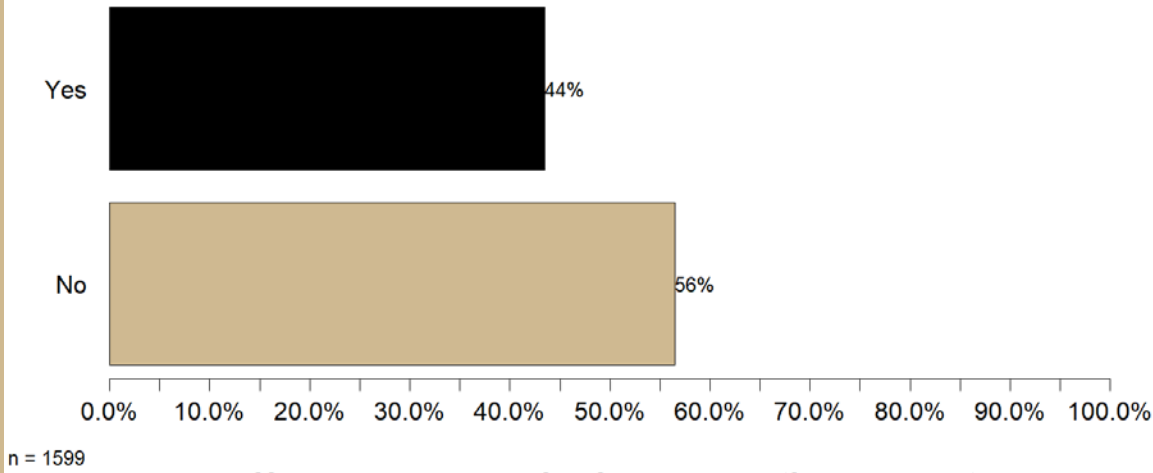
Company	Key commitment	First announced
AB InBev	2025: 35% GHG reduction 2040: Net zero	2018
Addo Food Group	2035: Net zero	2021
Arla Foods	2030: 63% Scope 1+2 GHG emissions reduction	2021
Bacardi	2025: 50% Scope 1+2 GHG emissions reduction; 20% Scope 3 reduction	2018
Barilla	2030: 25% Scope 1+2 GHG emissions reduction; 26% Scope 3	2019
Cargill	2030: 30% reduction per ton of product sold 2050: Net zero	2019
Carlsberg	2030: Net zero from breweries; 30% emissions reduction across entire value chain	2017
Carrefour	2040: Net zero	2020
Chipotle	2030: 50% Scope 1+2+3 GHG emissions reduction	2021
Chiquita	2030: 30% Scope 1+2 GHG emissions reduction	2021
Conagra Brands, Inc.	2030: 25% Scope 1+2; 20% Scope 3 per metric ton of material	2020
Coop Sverige AB	2026: 50% Scope 1+2; 25% Scope 3	2019
Dairy Farmers of America	2030: 30% Scope 1+2+3 emissions reduction	2020
Danone	2030: 50% Scope 1+2+3 emissions reduction 2050 Net zero	2017

A POTENTIAL SOLUTION FOR COMPANIES TRYING TO MEET THEIR SUSTAINABILITY GOALS IS THROUGH CORPORATE SUSTAINABILITY PROGRAMS

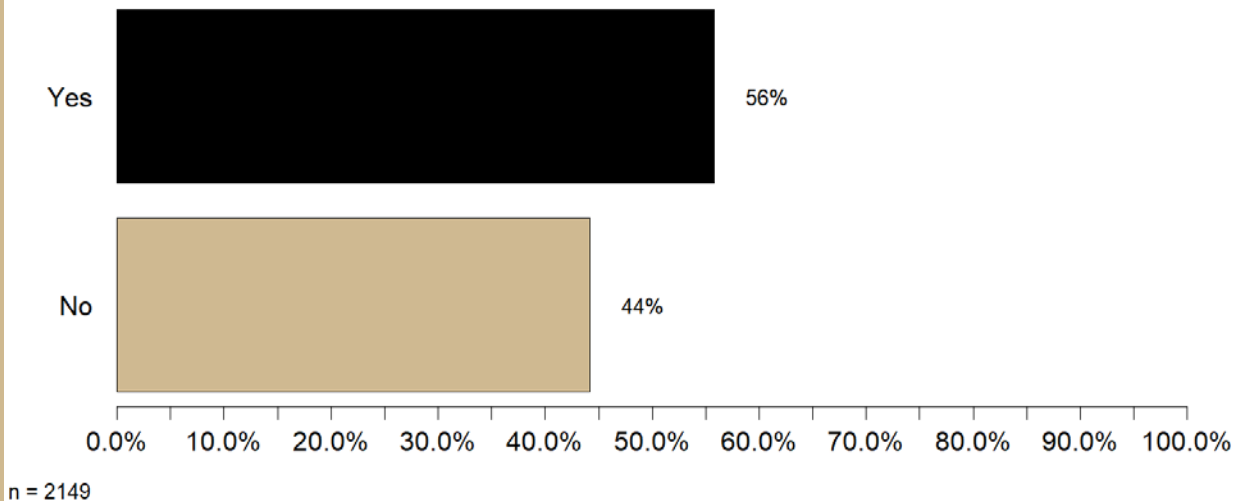
- **A couple of examples:**
- PepsiCo and Walmart have partnered on a 7-year \$120M investment supporting U.S. and Canadian farmers to improve soil health and water quality
- McDonald's Global Chief Impact Officer stated in their Q423 Investor Meeting, "In tandem with our work with the Sustainable Market and Markets Initiative, we are developing a financial blueprint for farmers to de-risk the financial burden as they transition to regenerative farming"

FARMERS ARE INTERESTED IN CONSERVATION PROGRAMS, ESPECIALLY WHEN THEY BRING FINANCIAL INCENTIVES, BUT A CONSIDERABLE PORTION OF THEM ARE NOT AWARE OF SUCH PROGRAMS OFFERED BY COMPANIES

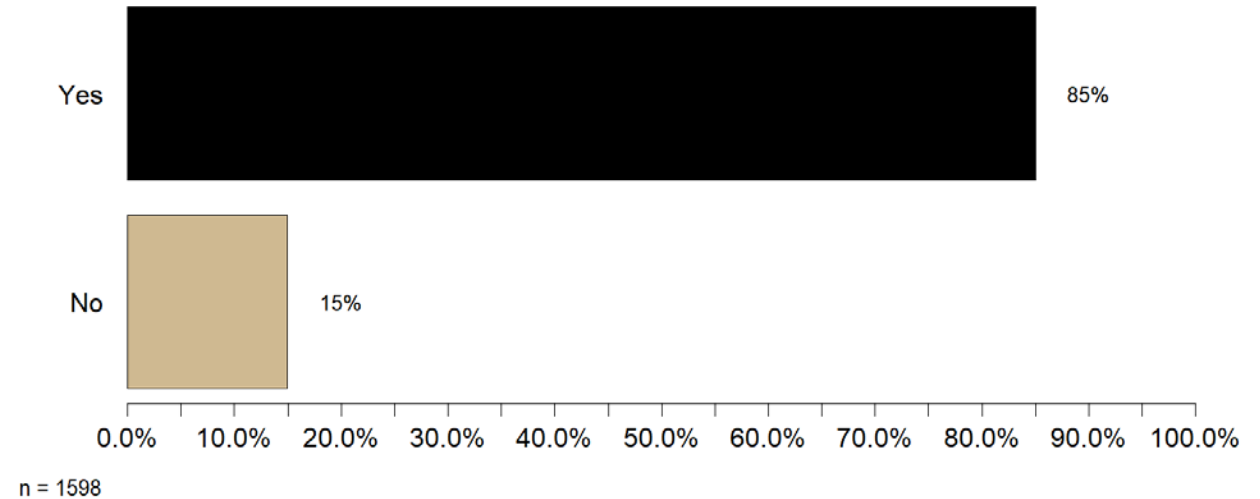
Aware of programs offered by companies



Have you ever received a conservation payment

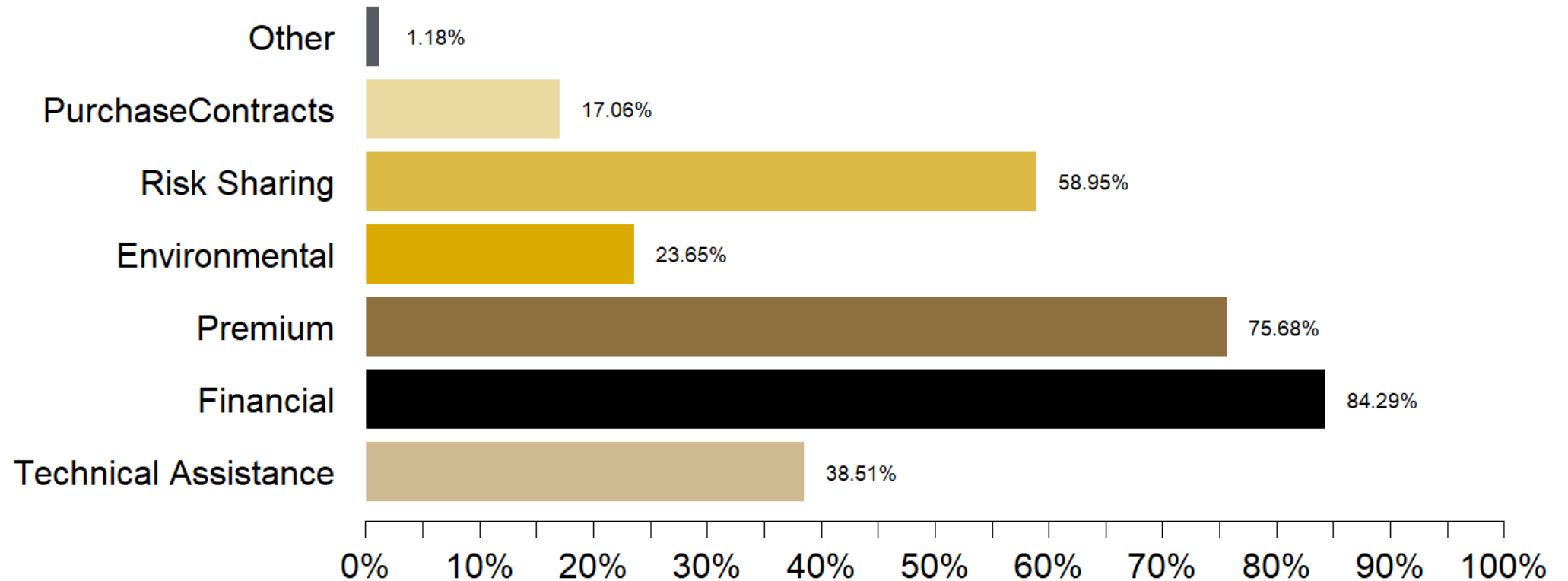


Interested in Enrolling in a Conservation Program with Funding in the Future



A SUCCESSFUL REGEN AG PROGRAM SHOULD CONTAIN FINANCIAL INCENTIVES, POTENTIAL PREMIUM ON PRODUCTS AND RISK SHARING

Please rank the top three program features that would bring the greatest benefit



n = 591

Percent of Time Benefit was Ranked In Top 3

FARMERS NEED TO HAVE THEIR FINANCIAL AND TECHNICAL RISKS ADDRESSED TO JOIN A REGEN AG PROGRAM

- For farmers, these programs must address 3 components:
 - 1. Capital investment**
 - Centered around the fixed costs associated with implementing regenerative practices on the farm.
 - 2. Yield and price/premium risk**
 - This component is dedicated to addressing the potential yield risks associated with certain regenerative practices, like those observed in cover crops
 - 3. Financial (cash flow) risk**
 - A successful regenerative agriculture program should incorporate a component that assists farmers in mitigating the financial burden associated with alterations in variable costs, including inputs and operations changes.

INVESTING COMPANIES NEED TO HAVE THEIR GOALS AND COMMITMENTS MET THROUGH A SUCCESSFUL REGEN AG PROGRAM

- For companies investing in Regen Ag, these programs must:
- Deliver scalable farm-level initiatives that meet Corporate Sustainability Goals and commitments by helping the farmer improve yield and soil health and reduce production costs.
- Create a program that provides measurable, reportable, and verifiable data from regenerative practices adopted that can be used toward sponsoring companies' Corporate Sustainability Goals.
- Key Success Metrics: sponsored acres, crop or geography specificity, incorporation of the commodity in the value chain