Regenerative Agriculture

How to make it grow

The role of companies in galvanizing systems change
The US farming system looks like it does for a reason. A system shift is possible & benefits are tangible.

Regenerative agriculture is as old as farming itself. It is an approach to the land that seeks to sustain the health of the soil, water, and ecosystems upon which the fertility and productivity of the land have always depended. How can companies contribute to the growth of regenerative agriculture? That’s the question that generated the Scale Lab, a new partnership between Sustainable Food Lab and the Midwest Row Crop Collaborative.

A story of scale for regenerative agriculture emerged from research interviews and vigorous conversations among the following people: Margaret Henry, PepsiCo; Stefani Millie Grant, Unilever; Kate Schaffner, Kellogg; Nick Mylet, ABInBev; Chris Adamo and Tina Owens, Danone; Steve Rosenzweig, General Mills; Luc Beerens, Mars; Sara Kroopf, McDonald’s; Brian Nash and Andy Utterback, Ingredion; and Carrie Sanders, The Nature Conservancy.

The status quo arose from generations of market signals and government programs. A regenerative system is possible, if farmers are supported and system drivers are addressed. Such a system can help mitigate the impacts of climate change.

1. Technical support
2. Cultural acceptability
3. Financial incentives

1. Seek synergies between sustainability and traditional business interests.
2. Partner to address climate risk, supply, consumer perceptions, investor relations, and corporate purpose.

1. Pricing structures and pro-sustainability policies.
2. Markets for diverse crop rotations
3. Regulatory solutions that level the playing field.
4. Innovation in product development.
2021 Work

We began by mapping the system to identify leverage points that would help extend the influence of supply-shed programs. We created stories of climate risk and regenerative agriculture to use within each company for identifying internal champions and creating cross-functional alignment, executive buy-in, and more efficient allocation of resources. By interviewing farmer network leaders, we were able to identify the investments needed to increase the capabilities and reach of implementing partners.

Downloadable Outputs Include:

- A deck on how to build and support the capabilities of farmer networks to help implement programs;
- A system model of farmer decision-making;
- A climate risk deck, with:
  - Data and graphs about frequency and impacts of increased temperatures, droughts, and flooding;
  - Tips for engaging procurement teams about climate risk;
  - Brand risks from climate change;
  - Tips for engaging marketing and brand teams;
  - Financial risks;
  - Tips for engaging finance teams;
- A cross-function interview guide with suggested engagement questions for procurement, supply chain, and finance leaders;
- Function-specific strategy maps to use along with the interview guide to identify where the priorities of sustainability intersect with those of other key functions;
- A marketing engagement decision tree to show how sustainability can be an important issue for customers;
- A guide for engaging marketing and branding departments;
- A give-get tool to build closer relationships with key stakeholders and better understand how they might benefit from the partnership;
- Funding for the Midwest Row Crop Collaborative to identify strategies for ag retailer engagement in regenerative agriculture; and
- A collaborative proposal for the USDA Climate Smart Partnership Program.
Differing theories of change

Everyone in this field is aware of competing theories about agriculture. Some say soil carbon is the answer to climate change. For many activists, solutions lie in local small-scale farming. On the other hand, some leaders would have us believe that all the key actors in large-scale agriculture have the solution well in hand.

Sustainability managers in many companies shared this “steady progress” worldview for a long time, and have added new checklists and data collection requests to farmers’ supply-chain requirements, often assuming that deficiencies could be solved with a combination of training and peer pressure. These practices -- and these assumptions -- have done little to help farmers, or to ensure the long-term future of their croplands. The time has come for a better way.

Some farmers have been pioneering regenerative farming systems over the past decades (or even centuries). What would it take to empower more farmers to adopt these practices, which are more resilient to climate change and potentially at least as profitable as the current system, especially over the long term?

The first step in answering such questions is to ask why the current system is the way it is. Here’s how we summarize our understanding:

- Farmers (and procurement officers) make rational decisions based on financial incentives, technical support, and a culture of productivity.
- The current farming system is enormously productive, and meets domestic and global demand for food, livestock feed, and ethanol.
- Pressure to reduce costs of production and increase scale are intrinsic commodity dynamics.
- A sophisticated input industry enables high yields from ever fewer farmers with machinery, fertilizer, pesticides, and seeds.
- Each farmer’s risks are mitigated by government policies.
- Leaders of farmer organizations (and farmers who appear on the cover of ag-sector magazines) are those who are the most successful at producing high yields with ever-fewer days of work.
Individually rational decisions create problematic "externalities" for everyone. In this case, as farmers rationally pursue increased productivity per acre, and as rotation crops like hay and oats disappear from the landscape in favor of summer-growing crops like corn and soybeans, the ground is now bare half the year, with less root-matter left to enrich the soil.

Midwest agriculture evolved toward simplified rotations of corn and soybeans.
Despite efficiencies, there are many challenges with the current system

Farmers generally know that these problems exist across the landscape, and at the same time they correctly remind us of many positive developments over the last 70 years or so. These positive steps included the spread of conservation practices ever since the 1930s Dust Bowl, including the adoption of reduced tillage in the 1990s.

Many farmers are committed to improving the health of their soils, but they are simultaneously trapped in a commodity flywheel, in which all producers seek to generate value by commodifying their inputs and differentiating their outputs. They want to buy cheap and sell high. Commodity farmers can’t do that, however, because they sell on markets that reward lowest cost production and depend upon expensive inputs from suppliers of technology, fertilizer, seeds, and pesticides.

This is a central dilemma: Farmers make rational decisions to pursue productivity and efficiencies because those are the only ways they have succeeded over the past few generations, and the entire commercial food system reinforces this decision-making process. Regenerative agriculture offers a way out of this dilemma. In such systems, crop diversity enriches the soil and improves the productivity and long-term usability of the soil over time. More farmers will make this shift if their financial incentives and trusted agronomic supports align around it. Many players are part of this challenge, including landowners; lenders; businesses that sell farmers seeds and other inputs; and the food-buying public.

Just as farmers make rational decisions within their enabling environment, food companies have rationally competed to reduce input costs and add value as they process and combine raw materials. The normal business model assumes that issues like carbon emissions; loss of nutrients into rivers; diminishment of biodiversity; and the decline of rural communities are “external” to supply chains. Very few companies are making full-on investments in a resilient, biodiverse, carbon-rich agriculture that can be passed from generation to generation.

What has been a relatively resilient system is now on shaky ground. Climate risk is one among several urgent signals telling us that change is needed.
When the Scale Lab group first convened, each participant represented a front-runner organization, already committed to increasing the impact and reach of their programs. We developed this simple system map to frame discussions about what companies could do to accelerate progress from pilots to system change.
The “map” captures our starting hypotheses about where to find the most leverage for change, and we started with a focus on what it takes to increase farmers’ openness to investing time and money in transitions to regenerative farming systems.

One of our contributions to the field was to frame farmer support in terms of three core imperatives: technical support, cultural acceptability, and financial incentives.

Many current pilots fail to take all three needs into account. We also studied farmer networks that help implement supply chain programs and outlined primary ways that companies can support those networks.
We then turned to a second focus: increasing corporate investment in these supply chain programs that support farmers. From this part of the simple system map, we framed our analysis like this:

In the increasingly globalized, complex, and unpredictable markets of the 21st century, agricultural supply chains need to incorporate sustainability into their performance objectives. Doing so helps reduce systemic risk in the eyes of investors, and empowers market participants across the supply chain to incorporate regenerative or sustainable agriculture into their brand identities.

The bottom line: Sustainability and regenerative agriculture represent common sense at a time when climate risk, consumer perceptions, and resilient supply are increasingly urgent strategic priorities.
3-5 years
- Break pest and disease cycles
- Increase soil health
- Improve moisture holding capacity of the soil
- Take advantage of incentives from markets, policies, and ecosystem service credits

6-10 years
- Improve resilience in bad-weather years
- Increase nutrient availability through soil profile
- Reduce input costs
- Raise farmland value
- Avoid regulation and transition costs

Costs of Regen Ag
- For farmers, investments in seeds, machinery, storage, new knowledge
- For companies, technical, financial, and cultural support of farmers across supply sheds

Benefits of Regen Ag
- For farmers, investments in seeds, machinery, storage, new knowledge
- For companies, technical, financial, and cultural support of farmers across supply sheds

Initial costs are significant, but costs decline over time as benefits increase.
Crop rotation as a crucial strategy

Because climate resilience is crucial to the business case for regenerative agriculture, for both farmers and food companies, we studied model programs, the rationale for those programs, and potential strategies to increase their scale.

As we’ve already noted in this report, despite a lot of industry focus on incentives for single practice change, such as reducing tillage or planting cover crops, the science of climate mitigation and resilience led us to frame crop rotations as a crucial strategy for regenerative agriculture because we see no other way to ensure living roots in the soil year-round; living cover over the soil; and increased soil-organic carbon. The above simple map is one way to visualize benefits for farmers of crop rotations.
Farmer perspectives on benefits of and barriers to extended crop rotations in Iowa

From a survey of farmer organizations and networks, the following additional needs emerged:

- Provide incentives to support practice changes that lead toward more regenerative systems.
- Facilitate partnerships in each region:
  - among companies that might buy different parts of the crops in rotation;
  - with ecosystem-payment pilots to show farmers that the customer is at the other end of payments;
  - with grain merchandisers to help with farmer recruitment; and
  - with retailers of farm inputs to provide training and align soil health advice.
- Reduce measurement costs, including data collection, by using remote sensing and statistically significant samples of farmers.
- Integrate on-farm profitability into data collection and reports.

According to surveys of Midwestern farmers, these are the most important next steps to support the necessary transition. These steps all require actions by a variety of organizations in both the private and public sectors. No one step is sufficient without mutually reinforcing additional steps. Only private companies can provide markets for rotation crops. Companies and government programs can supply some of the other needs. Such soil and water conservation districts, cooperative extension bureaus, crop advisors, and farmer networks also have significant roles to play.
For the transition to more regenerative farming systems, farmers are of course primary actors; they decide what crops to grow, what livestock to raise, and what methods to use. Our system change question is this: what is the context within which farmers make decisions, and how might that context shift so that farmers will invest time and money in regenerative farming? To shift the context, which sectors have design capability and influence?

Companies play leading roles in helping regenerative agriculture flourish

Governments, scientists, non-governmental organizations (NGOs), and businesses are the key players for shifting the context. Governments are the only institutions publicly mandated to serve the long-term common good. Science can help us answer many technical questions. NGOs are able to support crucial research and education efforts that might not otherwise be possible.

But the business sector has a unique and powerful role all its own. Food and beverage companies are global, and they have mastered how to efficiently deliver goods and services through their supply chains. But they cannot be the only dominant actors, because their orientation to shareholder value is sometimes counter to the broader public good. Nevertheless, with the entire global economy facing systemic risks from climate change and inequality, many companies have hired teams of brilliant, creative, and purpose-driven people who are charged with designing supply chains that are both equitable and resilient.
Three traps that lead to paralysis

Trap One: Fear of Criticism

The path toward achieving more regenerative and resilient systems, especially the path pursued by corporations, is lined with critics. We think it’s appropriate that powerful players are held to a high standard, but the fear of public criticism can keep businesses from going public with incremental improvements. If companies can only tell a story after they’ve achieved all goals— and anything less is denounced as greenwashing— this slows learning and hinders progress.

Trap Two: The False Allure of Inaction

The second trap is to ignore the costs of doing nothing, viewing the sustainability team as a “nice-to-have” function separate from the core business of a company. We notice two indicators of such “sidelining”: 1) when climate risks are not included in investor reports, and 2) when sustainability targets are not owned and delivered by company function. The 2021 United Nations Climate Change Conference in Glasgow (COP26) shows that now is an “all-hands on deck” moment. Sustainability, especially in agriculture, is a crucial field of innovation. It represents the only path to mitigating the increasingly urgent risks of climate change.

Trap Three: Dismissal of Government’s Role

The third trap is to dismiss the role of government. We need to change the narrative—that value is only created in the private sector. The gap between the current system and a climate-positive system is too big for the private sector to bridge alone. Only government is powerful enough to set the rules; avoid free-riding; hold companies accountable for hitting shared targets; and invest in technologies that take a long time to become profitable. Business leaders could jointly lobby for government to help set the rules for all. Within such a level playing field, entrepreneurs can innovate.
Executives agree that progress on regenerative agriculture requires cross-function engagement.

As Scale Lab participants explored how to increase internal cross-function engagement in regenerative agriculture, we invited the following three people to share lessons from their own experiences.

Because climate resilience is crucial to the business case for regenerative agriculture, for both farmers and food companies, we studied model programs at different companies, the rationale for those programs, and potential strategies to increase the scale of those programs.
Many of the benefits of regenerative agriculture are public goods. Some of the investments should be public too.

Widespread enthusiasm for regenerative agriculture would not exist if only farmers benefited. The benefits from such a transition accrue to all of us.

Farmer livelihood and resilience, as well as community well-being, are part of how many organizations view regenerative agriculture. We imagine some of those potential farm-community benefits as follows:
2021 Summary

Mapping the system with widespread input enabled us to understand how the agriculture sector could make faster progress toward regenerative models. Even though each Scale Lab participant is dissatisfied with the ability of pilot supply-chain programs to achieve impacts across sourcing landscapes, these programs are beginning to change farming practices in the Midwest, generating a wealth of knowledge about what works and what else is needed.

Key leverage points lie in the engagement of senior executives across companies, supporting agronomists and farmer networks, and broadening goals from specific practice changes to crop diversification. Climate risk is a crucial driver for everyone in the supply chain.

Scale Lab participants are industry leaders. They are visionaries and implementers. And they are well on the way toward transitioning millions of acres into more regenerative farming systems.

Looking toward 2022, more collaboration, innovation, and long-term strategy will follow.
Work in 2022

During the next phase of the Scale Lab, participants will sort into focus areas so they can:

- Continue to share decks and strategies to communicate the WHAT and HOW of regenerative agriculture strategies for different audiences.
- Combine learning about accounting guidelines for Scope 3 and landscape impacts, seeking to reduce the data collection burden on farmers.
- Jointly invest in the capabilities of project partners to reach more mainstream farmers beyond the early adopters.

- Explore contracting models with farmers and suppliers to support transition.
- Test collaborations among feed, food, and ethanol companies to increase crop diversification.
- Elaborate opportunities to integrate social equity into agricultural programs, starting with research by the Midwest Row Crop Collaborative into goals and barriers for Latino/Latina/Latinx farmers and ranchers in the Midwest.
- Share the evolving science on nutrient density and microbiomes and potential shifts in food markets.

All together, we will generate models and tools for widespread use as well as a set of scenario stories of what might happen that will make a big difference for the overall goal of growing the adoption of regenerative agriculture.

Conclusion

Some of the brightest, most experienced people in the agriculture sector contributed to this report, and more will help shape next steps, likely in small, focused groups. We are grateful to the Walton Family Foundation for seed funding. The Sustainable Food Lab and the Midwest Row Crop Collaborative will continue to be convening partners.
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