Article
Different Stakeholders’ Conceptualizations and Perspectives of Regenerative Agriculture Reveals More Consensus Than Discord

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Abstract: A range of content analyses have recently sought to define the term “regenerative agriculture”, which has gained a surge of attention in the last few years. However, these studies have not incorporated the voices of those using the term to define their work: the farmers, private companies, researchers, and NGOs giving energy to the movement. In this study, we conducted qualitative interviews with 19 stakeholders from across the United States. Key points of consensus were that regenerative agriculture moves beyond sustainability, is outcomes-based, and, as such, is context-specific: focusing on outcomes provides opportunities to be adaptive to a specific context and that, depending on one’s context, different practices may be used to achieve target outcomes. We identified three categories of outcomes: climate adaptation and mitigation, socio-economic benefits, and integrated systems. We also found several opportunities within the energy of the movement. First, regenerative agriculture remains a “big tent” that is still accessible to a broad range of farmers. Participants also underscore the need to move toward systems-based research as opposed to reductionist research. Finally, we present participants’ mixed perspectives on the role of government, the private sector, and third parties in moving regenerative agriculture forward.

Keywords: regenerative agriculture; food system transformation; soil health; qualitative research; resilient food systems

1. Introduction

Over the last few years, the term regenerative agriculture gained considerable attention from producers, consumers, researchers, and policymakers as well as several major food, beverage, clothing, and agribusiness companies [1]. While this interest reflects promising commitments toward creating more sustainable food and agriculture systems, there is yet to be a comprehensive and agreed-upon definition to what regenerative agriculture actually is [2]. In fact, there appears to be a broad range of definitions put out by various individuals and institutions [3]. The absence of a collective understanding complicates communications between stakeholders and creates challenges to generate and promote policies, fund research, provide technical assistance, and to establish incentive programs that support regenerative agriculture [2,3].

The call for regenerative agriculture follows a growing recognition of the need to create more resilient food and agriculture systems [4,5]. Addressing the unfolding climate change crisis is a central theme: food and agriculture systems both feel the impact of extreme weather events such as drought or flooding and are also considered a contributor to climate change [6,7]. Conventional agriculture practices such as tillage contribute to the substantial
erosion of topsoil, which is now occurring at an estimated one inch per decade [8]. In their 2015 report, FAO classified one third of the world’s soil as degraded [9]. There is also an ongoing need to address food insecurity, which has been on the rise since around 2015 [10]. The COVID-19 pandemic spotlighted how major shocks at local, regional, or global levels can jolt peoples’ access to food in every region of the world [11]. The resiliency of food and agriculture systems is essential to reduce vulnerability to future shocks and stresses.

Despite general agreement that more resilient food and agriculture systems are needed, stakeholders across the food supply chain struggle to communicate potential solutions. All these stakeholders, from farmers to researchers to consumers to policy makers, lack common discourses when it comes to food production and climate change, not to mention regenerative agriculture. These divergent discourses stem from diverse social structural positionalities. From a social constructivist framework, individuals conceptualize and make meaning of an idea through their social interactions, experiences, and specific circumstances [12,13]. However, if the goal is to collectively create more resilient food and agriculture systems, actors need to be able to communicate across these boundaries. Transparent communication is essential to grasping what the various challenges are at a global level and in different contexts and to identifying effective ideas and innovations. Talking across positionalities is crucial to acknowledge and highlight the wisdom that exists—and is necessary—to make needed changes to our production patterns.

Regenerative agriculture has been consistently critiqued for its ambiguity as a guiding concept. A few recent articles present literature reviews and/or content analyses on news and research publications to further characterize the term and its emergence in the mainstream [2,14–16]. While this scholarship is important, we have not incorporated the voices of those using the term to define their work. In this study, we seek to expand on their contributions through qualitative research with those that have a stake in the game: the farmers, researchers, private companies, nonprofits, and foundations using the term regenerative agriculture or considered eminent in regenerative agriculture and regenerative farming. With support from a panel of experts on US food and agriculture, we identified and recruited four to five individuals representing each of the above stakeholder groups to participate in the study. We conducted 19 semistructured interviews to explore their conceptualization of regenerative agriculture and register their sentiments and perspectives on the movement. Interview analyses illuminated several commonly held views on regenerative agriculture, in addition to discrepancies. These findings help us identify opportunities within the regenerative agriculture movement and strengthen a pathway for collaborations across the food and agriculture value chain toward more resilient and equitable food systems.

Alternative Movements to Conventional Agriculture

Efforts to establish alternative approaches to conventional farming date back to early reactions to the industrialization of agriculture in the Global North. Several authors point specifically to the development of the Haber–Bosch process, which enabled the production of synthetic nitrogen fertilizers starting in the 1910s [4,17]. While this met a timely demand for a commercial nitrogen fertilizer, it represented a start of input-heavy [and -dependent] farming that has only grown over the years. These synthetic fertilizers in addition to pesticides enabled farmers to dramatically increase their production [4,18–21]. In fact, the Haber–Bosch process is credited with the exponential population growth of the past 100 years, as farmers could grow quadruple the amount of food produced on the same amount of agricultural land [4,18,19,21].

While synthetic fertilizers and several proceeding agricultural innovations resulted in intensified agriculture that amplified our production capacities, these advancements have also catalyzed subcultures of contrarians over the years. Alternative agricultural movements have arisen in response to a variety of environmental and social concerns with conventional agriculture. The landscape of alternative agriculture is vast and in-
cludes movements and philosophies such as conservation agriculture, organic agriculture, sustainable agriculture, permaculture, and agroecology [15].

Regenerative agriculture is nested within these various movements, having appeared first in the 1980s, then going dormant through the late 2010s [14]. In the US, many credit Robert Rodale of the Rodale Institute with first coining the term in a 1983 article published in The Futurist [22]. However, in their 2022 review of literature, O’Donoghue, Minasny, and McBratney find that regenerative was first poised alongside agriculture in writings by Gabel [23] and Sampson [24] and subsequently embraced by Rodale [15]. All three wrote from the context of US conventional agriculture, which by then had become high-input and tillage intensive, which they saw as environmentally and socially destructive. Degradation of soil, water, biodiversity, and human health and well-being were the concern in these early writings, with soil being of particular importance [22–25].

Rodale described how conventional agriculture was degrading our natural resource base and was incapable of meeting our growing food supply needs [22]. He argued that “sustainability” did not go far enough to underscore the need to restore, improve, and increase productive resources that agriculture depends on. Regenerative agriculture, he contended, could regenerate our natural resources while simultaneously meeting the needs for global food supply and ensuring adequate social and economic benefits to farmers [22]. He believed that agriculturists should seek inspiration from nature:

My conception of regeneration begins with the observation that all living systems have ways to respond constructively to disturbance. When they are shaken up in some way, they tend to respond by recovering and often improving beyond their pre-disturbed state—regenerating [26], p. 580.

Although the Rodale Institute continued to use the term, it was not until recently that regenerative agriculture gained prominence in the US. In 2016, regenerative agriculture started to re-emerge in written literature and news stories [14]. Popular books from farmers such as Gabe Brown in the US and Charles Massy in Australia articulated their transitions away from conventional farming to regenerative systems [27,28]. A flurry of private companies began adopting the term, piloting programs aimed at reducing their carbon intensities [1]. At the same time, nongovernment organizations (NGOs) adopted the term [see [15] for several examples].

An assortment of academic articles and books have recently explored regenerative agriculture. A few present literature reviews to identify central themes, definitions, and map out timelines of the movement [2,14–16]. In some cases, the authors offer provisional definitions and/or present frameworks to support research in regenerative agriculture [14–16]. Many point to soil health as the focal point in regenerative agriculture to address issues related to climate change, land quality and productivity, and biodiversity [4,16]. However, some argue that for agriculture to be regenerative, it must center human dimensions and address social concerns. In some cases, the focus is primarily economic, wherein practitioners and corporations contend that regenerative agriculture offers “win-wins” by boosting on-farm profits while simultaneously supporting ecosystem services [29]. Others go further to argue that for regenerative agriculture to fulfill its promises to address climate change, it must first address issues of social justice and contend with the extractive and still-felt legacy of colonial policies [19,29–33]. These diverse discourses demonstrate the breadth of ways that different writers are bringing attention to regenerative agriculture. In this study, we add voices to the process of conceptualizing the term, sharing perspectives from farmers, researchers, private company employees, and nongovernment agency employees.

2. Materials and Methods

This study is rooted in a constructivist paradigm and uses grounded theory. From a constructivist viewpoint, individuals develop subjective meanings of a concept based on their social interactions and life experiences [34]. As such, interpretations are pluralistic and complex, and the researchers’ role is to make sense of the views and meanings that different individuals have about an idea [35]. We thus conducted an exploratory study,
collecting qualitative data through semistructured interviews with individuals from across the food and agricultural value chain. See Supplementary Materials.

2.1. Participants

The study population comprised four groups: farmers, researchers [mainly from universities], individuals representing either nonprofits or foundations, and private companies. These identifying categories were not necessarily distinct: several participants both farmed and worked for one of the other groups. In total, we conducted 19 interviews with four to five interviewees from each of the four groups. Participants resided in multiple US states, with their work representing substantial coverage of North America and each of the four administrative regions of the US. See a list of states within each region at [36]. The private companies representing each had recently completed regenerative agriculture sourcing pilot projects in North America [US and Canada]. Each company had major footprints in global food production and sourced food in multiple US states. Nongovernment organizations included nonprofits and foundations that worked both locally and nationally across the US. Researchers included faculty and staff from recently created centers and initiatives in regenerative agriculture in the US. Farmers were, of course, more locally based in the state they farm in, but each had a pronounced public presence within their region or across the US.

We used purposive selection to identify participants, wherein participants are deliberately selected to provide information because of their specific expertise and/or experiences [37]. The goal of purposive selection is to achieve “representativeness or typicality” of the setting, activity, or individuals of interest while also capturing the heterogeneity of the population [37], p. 89. To obtain this representativeness and range, we worked with a panel of experts and our situated knowledge of this field to create a list of individuals from across the food and agricultural chain to recruit for this study. We also conducted online searches using the term “regenerative agriculture” and “regenerative farming” to identify individuals and organizations prominently using the term in their outward facing communications. Conscious of the problematic exclusion and erasure of Indigenous, Black, and Brown people in too many narratives of US agriculture, we were intentional in our invitation of a diverse range of individuals to participate in this study. Over half of the participants were women and/or identified as Black or Hispanic. We narrowed our scope to comprise those who predominantly work in the US, although participants resided in states across the country.

2.2. Data Collection

We conducted individual in-depth, semistructured interviews with participants from September 2021 through March 2022. All interviews were conducted over Zoom, due in part to restrictions from COVID-19. However, this also broadened our reach, allowing us to interview people from across the US. Interviews lasted between 45 min and one hour and followed a semistructured protocol.

The protocol was developed through a comprehensive review of regenerative agriculture in academic scholarship and news articles. Protocols were similar but adapted to each stakeholder type [farmer, researcher, private company, or nonprofit/foundation]. Participants were asked to describe their relationship with, conceptualization of, and perspectives about regenerative agriculture. As an exploratory study, the interviewer started each interview explaining that there was no expectation of a positive [or negative] perspective on regenerative agriculture. We also asked participants what role they felt that actors from the other categories should play in the regenerative agriculture movement. We continued to conduct interviews until we felt that we had reached data saturation, wherein no new information or themes continue to emerge [38].
Each interview was audio-recorded and transcribed for data analysis. Identifying information was removed from transcripts to enhance confidentiality. Cleaned transcriptions were imported into NVivo 12 Pro by QSR International to facilitate data analysis.

2.3. Data Analysis

As an exploratory study, we used grounded theory to analyze data, allowing patterns and themes to emerge from the data through inductive analysis [39]. We analyzed the data in two stages. First, we analyzed each transcript, creating annotations and descriptive labels for themes that emerged from each interview. We coded emergent themes with an identifying label and a description characterizing the properties of that theme. While coding a transcript, we systematically assessed how new data reflected or diverged from previously created codes, facilitating the creation of new codes or subcodes that expanded upon a theme. When a first round of analysis was complete, we reviewed the set of codes as a team and decided on a codebook. We then conducted a second round of coding, using the same inductive process to verify themes.

2.4. Limitations

Qualitative research focuses on capturing in-depth analyses, which often means relying on smaller sample sizes than quantitative research [40]. In addition, the aim of qualitative research is not to make statistical generalizations [41]. Findings are thus most relevant to the specific context and are not necessarily generalizable to other populations.

3. Results

In conceptualizing regenerative agriculture, four overarching themes emerged across interviews. First, participants compared regenerative agriculture with sustainable agriculture, making the distinction that regenerative is about “improving” rather than just “maintaining” a resource. While all participants made this distinction, a few expressed irritation or perceived regenerative agriculture to be “just another term” that basically meant the same thing as sustainable agriculture. However, for some, this was an important evolution, as illustrated by this participant:

“A lot of folks who are using the term regenerative once used the term sustainable and realized that it was flawed in that sustaining is just maintaining and most of our farms are a degraded resource. Most of our land—full-stop—is a degraded resource. So, sustaining a degraded resource is less than desirable if you can actually make it better.”

Two inter-related themes were that regenerative agriculture is primarily outcomes-driven and as such, is also essentially context-specific. While there was ambiguity and disagreement about what the specific outcomes should be, participants emphasized that focusing on outcomes provides opportunities to be adaptive to a specific context and that, depending on one’s context, different practices may be used to achieve target outcomes, as illustrated by the following two participants:

“From our perspective, there’s no way to just write a list of practices that are absolutely regenerative every place in the world. You can’t prescribe regenerative agriculture. It is very place-based practice, from our perspective.”

“Being outcome-driven we can say: hey, these are the things we’re after and however you get there is up to you in your own context.”

Ten out of the nineteen participants 53% preferred to talk about regenerative agriculture as “principles”, arguing that one can adjust principles to a specific context. This articulation was often associated with soil-health principles. One farmer shared, “I describe regenerative ag by focusing on the principles and not getting caught up in products or practices. If you want to talk about regenerative ag, it has to be the six soil health principles . . . principles can work anywhere.”
3.1. Regenerative Agriculture Outcomes

As illustrated by Figure 1, participants identified outcomes that we characterized into three categories: climate mitigation and adaptation, socio-economic outcomes, and integrated systems. The size of each bubble reflects the number of participants who referenced the named outcome to illustrate which outcomes were most prominently mentioned.

![Figure 1.](image-url) Regenerative agriculture outcome theme categories and subcategories. Each size of the bubble corresponds with the number of participants who referenced the named outcome, with larger bubbles representing more participant references to indicate which outcomes were most prominent. Note: numbers are not statistically significant.

3.1.1. Climate Mitigation and Adaptation

All participants cited outcomes related to climate mitigation and adaptation. Addressing climate change was central to 17 participants’ perceptions of regenerative agriculture. Private company interviewees related their programs and efforts in regenerative agriculture to their “climate commitments” or “net zero commitments”. An addendum to the focus on mitigating climate change in regenerative agriculture was made by participants who work with farmers, either as peers or in an advisory position, who admitted they do not typically use the term “climate change” with farmers, particularly among more conventional farmers.

Participants also identified specific areas to target mitigation. The prevailing subtheme was on regenerating soil health, mentioned by 15 participants. In addition to, and often related to building soil health, were outcomes such as carbon sequestration, or improving water and air quality, and more generally addressing climate change.

3.1.2. Socio-Economic Outcomes

Each interviewee referred to outcomes related to socio-economic outcomes. Researchers and individuals from private companies, each of which had research programs coinciding with their farmer-sourcing programs, discussed the work being performed to
better understand what social indicators should be and how to study them. Economic success was an identified outcome aimed at ensuring farmer success and profitability, in addition to catalyzing economic durability through transitioning to regenerative farming practices. For farmer interviewees, each described finding economic success since transitioning to regenerative agriculture, and the greater emphasis was on economic resiliency: sustaining their livelihoods and that of future generations.

Eleven interviewees underscored the outcome of building community resilience, referring to “re-enriching” rural communities and “building stronger communities”. Several interviewees described how “extractive” current farming systems are, not just to the soil, but to social systems and especially rural communities. Participants tied the importance of creating economic resiliency for farmers to revitalize rural communities.

Seven participants, including three farmers, felt regenerative agriculture should produce health and nutritional outcomes. This referred mainly to the quality of food produced, but for some it also included avoiding farming practices that affect air and water quality. Seven participants contended that regenerative agriculture produced higher-quality food. For example, one farmer described how grazing cattle on a diverse diet of cover crops and grasses produced beef with good marbling and fat content.

Eight participants underscored that regenerative agriculture should include social justice outcomes, including increased equity in agricultural systems, especially related to Indigenous, Black, and Brown peoples in the US. Participants discussed the importance of acknowledging the contributions of Afro-Indigenous knowledge to what is now being called regenerative practices. A few participants, each of whom work with predominantly farmers of color, noted a feeling “of resentment” from these groups: “There’s actually some resentment among those groups about the term regenerative agriculture because they feel that a lot of those techniques are already being used among Indigenous people, and they just see this as another taking of their history.”

Securing fair and equitable labor conditions was cited by six participants. Conditions and fair remuneration for workers were key components of nonprofits’ consideration of regenerative agriculture. Three farmers described shifts from simply employing people to constructing worker opportunities for increasing “ownership, control, and governance” within their farming system. One farmer further tied this outcome to the importance of creating environments conducive to sustaining their labor force, describing how changing the way they farmed incorporated thinking about the people who worked for him.

Four participants named animal welfare as a critical regenerative agriculture outcome, citing the health and treatment of animals as indispensable to regenerative agriculture.

3.1.3. Integrated Systems

Integrated systems was the third overarching outcome category. Thirteen participants emphasized the importance of increasing biodiversity. This included increasing the diversity of plant and animal species, in addition to increasing microbial diversity. A few spoke of diversifying diets of poultry and livestock.

Six participants felt regenerative agriculture should strive for integrated systems that resemble or “mimics nature”, emphasizing the importance of “listening to the land”. Six people argued that regenerative agriculture essentially integrates crops and animals. Integrated systems were associated with minimized inputs, which was seen as beneficial to human health, the environment, and farmers’ economics. For a few, an eventual target outcome should be creating “closed systems”—where little to no outside inputs were needed.

3.2. Opportunities in Regenerative Agriculture

Sentiments toward the term regenerative agriculture varied, but across the board participants saw several opportunities within this movement (Table 1). In terms of conceptualizing regenerative agriculture, several themes emerged about opportunities that
participants see in regenerative agriculture and what role different sectors should have, including regenerative agriculture as a big tent and a shift toward systems research.

Table 1. Regenerative agriculture outcomes.

| Outcome Category                        | Illustrative Quotes                                                                 |
|-----------------------------------------|--------------------------------------------------------------------------------------|
| Climate mitigation and adaptation       | “I’m a huge believer in climate change, and a big part of the reason I am doing what I’m doing is because I want to sequester carbon, because I want my kids to be able to go to Florida and it not just be the ocean in 20 years, right?” |
|                                         | “Farming is seen as on the bad side of climate change or sustainability overall, as a polluter, or as something that is disruptive. So, I think some regenerative agriculture practices can help turn the table to actually make agriculture be part of the solution.” |
|                                         | “At the end of the day, what matters in agriculture is soil and the health of the soil and the relationships tied to it, as that has cascading impacts for the health of water aquatic systems, the impacts on greenhouse gas, and of larger climatic areas, both in terms of contribution as well as the ability to be respondent and be resilient within change.” |
| Integrated systems                      | “Regenerative agriculture really is about trying to put parity back into the production system. Working on ways to do that takes a variety of different avenues, but ultimately, it is creating more economic resiliency on farm. And what that does is, you know, that local multiplier effect … that’s the kind of thing that’s going to revitalize our rural communities in general is to put money back into farming.” |
|                                         | “Something very important when we talk about regenerative agriculture is acknowledging that this is not a new idea. It’s about really acknowledging and honoring, you know, the evolution of these ideas through predominantly Afro-indigenous communities and that those have really created them as well as continue to steward them to this day. It’s not an idea that was lost in time but it’s something that’s been really cared for and is active and alive.” |
| Socio-economic outcomes                 | “When I changed the way I farm I went to 180 employees that make well above the county average and we literally brought people in here … And they had to have a place to eat and sleep and drink and play and shop, and we built them and almost organically looked up one day said, ‘this is this has become a nice place!’ and it had literally been a ghost town.” |
|                                         | “We try to solve our problems with plants. So, whether it’s a fertility problem or a weed problem … we’re going to try to listen to the land and figure out what’s going on there and then solve it with a plant.” |
|                                         | “The fact is, industrial farming methods break the cycles of nature … the water cycle, energy cycle, mineral cycle, microbial cycle, carbon cycle, and there are other cycles … To me, regenerative land management is restarting those cycles of nature. And I don’t think you can cost-effectively do it without animal impact.” |

3.2.1. Regenerative Agriculture Is a Big Tent

Most participants saw regenerative agriculture as more inclusive, a “broad tent” that is accessible to a wider range of producers Table 2. For the six participants who explicitly described this, it was seen as essential to the regenerative agriculture movement, something that made it different from other movements in food and ag and would hopefully stay that way. This theme was tied to the need to transform our food and agricultural systems, particularly to address climate change. Two participants did not share this broad view of regenerative agriculture, indicating that regenerative must start with organic standards.

3.2.2. A Shift toward Systems-Based Research

As regenerative agriculture was deemed outcomes-based, participants discussed what type of research is needed to better understand and verify target outcomes Table 2. There was consensus that research should take a more “holistic” or systems-based approach for regenerative agriculture. A few participants, including all farmer interviewees, expressed disdain for the “reductionist” research typical in agriculture.
Table 2. Opportunities in regenerative agriculture, participant illustrative quotes.

| Opportunities                                      | Illustrative Quotes                                                                                                                                                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regenerative agriculture is a big tent             | “We want everybody thinking about how they might stick their toe in the water on this regenerative thing. (Whether it is) look: cover crops. Look: compost applications. Look at different crop rotations, look at soil health.”  |
|                                                    | “We think it’s really critical to not have like an in or an out club, because that’s not a process for transition.”                                                                                                                                                           |
| A shift toward systems-based research               | “I don’t know that our traditional reductionist scientific approach to on-farm research is going to serve regenerative well over the future of production agriculture, so (we need) more systems-based work.” |
|                                                    | “Real-world, on-farm research to get after advancing understanding of what’s actually happening in soils and ecosystems and also: here’s how it can be relevant to an actual farmer in the real world.” |
|                                                    | “Not only because we need to make sure that farmers of color are exposed to these techniques, but also because you may learn something from those farmers that applies to regenerative agriculture.” |
| An integrated role of government, the private sector, and third parties | “We do expect the government to organize this whole carbon market a little bit more, it is very fragmented and it is disorganized . . . there’s too many players and the rules are kind of not defined. And that hurts us, and it hurts the farmers . . . I think having a little bit more centralization of rules can help us develop the tools that are needed to execute that right and make it simple. We are trying to focus on the bureaucracy so farmers can focus on farming.” |
|                                                    | “One of the threats is that the policies, politics can change in this country in the next two years. But it may change, and regenerative agriculture might just disappear.” |
|                                                    | “I think the private industry is going to signal in the market that we are going to go this direction . . . but ultimately, I think for all to happen, we still need that policy arm to help create opportunities . . . I do think that there’s going to be greater opportunities of improving racial diversity and aspects of just getting more minority farmers to the table through government policy than through private resources. I think, NGOs, would be a big part of that as well.” |

Participants from private companies and research institutions described studies that they are doing that are integrating more interdisciplinary research expertise and methods. Participants indicated an increased emphasis on social outcomes. Most of this was focused on economic impacts associated with transitioning to regenerative agriculture, no one named other social outcomes that social scientists involved in their research projects were investigating.

Participants also felt that research needed to shift who is included in the research process. One researcher interviewee recognized farmers’ role in experimentation and knowledge-building, stating how farmers have been the ones leading regenerative agriculture and “the rest of us are lagging behind”. One participant stressed that farmers of color should be invited into more research, “Not only because we need to make sure that farmers of color are exposed to these techniques, but also because you may learn something from those farmers that applies to regenerative agriculture.”

3.2.3. The Role of Government, the Private Sector, and Third Parties

There was mixed sentiment over the role for government and policy in regenerative agriculture [Table 2]. One farmer exclaimed that they should “stay out of our way!” adding that government programs such as crop insurance are “a hindrance”. A different farmer articulated that regulation was not the answer “because I don’t think that our politicians have the strength to forego the influence of the lobbyists. The big food, big ag huge lobby.”

Most other participants felt that government had to have some role, either by incentivizing farmers to adopt regenerative agriculture or as a regulating force. For example,
one private company participant saw a need for some government intervention in carbon markets. However, participants also expressed concern that while government should play a role, a shift in politics could impact current progress.

Private companies saw a role for themselves in incentivizing and supporting farmers to transition to regenerative agriculture. Other participants had varied perspectives on the private sector’s ability to mobilize farmers. A few saw some potential in the private sector’s ability to mobilize farmers by paying “premiums” for sourced products grown in regenerative systems.

Others remained tentative as to how effective the private sector alone would be in advancing major change in farming systems. A third of participants suggested a joint, multisectoral role for government, the private sector, and third parties, such as nongovernment organizations (NGOs) or nonprofits. Private companies and nonprofits described how third-party agencies are already playing a role in mobilizing regenerative agriculture. Pilot programs from private companies are using third-party verifiers to help support and monitor enrolled farmers. One private company employs a third-party consultant group to do farmer outreach, on-farm evaluations, and create benchmarks for farmers enrolled in the program. Another implements a companion educational program for farmers interested in enrolling in their regenerative agriculture sourcing program.

Tied into the conversations of these different roles, there were mixed opinions about whether regenerative agriculture should have certification programs. Participants who were involved in either the creation of or the current implementation of a regenerative agriculture certificate asserted that it is important to ensure that regenerative agriculture is “defined and audited and meets peoples’ expectations to deliver concrete positive impacts”. Since regenerative agriculture is outcomes-based, those endorsing regenerative agriculture certificates described the process of developing different sets of indicators to track outcomes through expert panels and science-based evidence. Another sentiment was that certification allows farmers to be “rewarded”.

Other participants were dismissive of regenerative agriculture certificates. While an argument for certifications was, for some, important for consumers, others felt that the myriad food labels tied to different certificates out there are too cumbersome for consumers to realistically follow. One participant expressed their uncertainty, saying that certificates “create exclusion . . . it is something that ties certain values or a certain quality to a process that not everybody may have access to financially or administratively”.

Regenerative agriculture certificate discussions were often juxtaposed with the USDA organic certification process, of which sentiments were similarly mixed. Others expressed disdain for how the organic certification process had evolved, and thus felt that regenerative agriculture should not follow.

4. Discussion

These qualitative data extend and build upon previous scholarship exploring regenerative agriculture. Despite concerns that regenerative agriculture is not well-conceptualized, our sample of farmers, researchers, and individuals representing private companies and nonprofits shared several common understandings of the term. In line with the limited published scholarship, our respondents saw regenerative agriculture as improving rather than just maintaining soils and other resources key to agricultural production [42]. Along these lines, participants easily positioned regenerative agriculture as a movement that builds upon earlier work in sustainable agriculture. Further exploration of the perceived political, economic, and conceptual limitations of sustainable agriculture could be useful to protect the concept of regenerative agriculture from the same perils [43]. Participants in our study felt that regenerative agriculture expands to include environmental and human health and economic prosperity, similar to a few other scholars [16]. Like others, several participants in our study underscored that regenerative agriculture is rooted in knowledge generated by, but rarely attributed to, Indigenous, Black, and Brown people [2,44].
In their review of regenerative agriculture in academic scholarship, Newton and colleagues find that the predominant distinguishing factor in definitions was whether authors discussed “processes” (principles and/or practices), outcomes, or both [2,27,42]. In our study, participants felt that regenerative agriculture is outcome-driven and thus context-specific; centering outcomes rather than practices allows for adaptability to specific contexts while maintaining common objectives. There is a tension concerning research approaches needed for regenerative agriculture. With the consensus that regenerative agriculture should be outcomes-driven, there are appeals to identify outcomes and validate measurements. However, it is unlikely that broad, globalized sets of standards will be effective across contexts. Shifting toward systems-based research was viewed as crucial to advancing regenerative agriculture, a call often made when discussing the research needs to address global challenges [31]. We found contempt, particularly among farmers, for the traditional top-down research approach and who is typically involved in the research process. Instead, researchers should embrace participatory research approaches, making farmers partners in each stage of the research project. Not only does participatory research improve the applicability of findings to real-world scenarios, but the coproduction of knowledge can empower everyday citizens to understand, and have more trust in, the research process [45]. Providing opportunities for a variety of relevant actors to interact and engage with each step of the research process can further lead to knowledge products that inform real-world transformations [46].

Participants had vastly different opinions on creating a regenerative agriculture certificate or label. Indeed, a few participants were either previously or currently involved in development and/or implementation of each of the three certificates tied to regenerative agriculture [47]. For them, certification was important for accountability and transparency, a way for farmers to communicate to consumers that their food was produced in a certain way. That said, the majority of participants were pessimistic about regenerative agriculture certification. Part of the ambivalence relates to the potential for them to exclude farmers, detracting from regenerative agriculture’s current “broad tent” status. All but two participants wanted to avoid tying regenerative agriculture to organic agriculture, relaying how organic certification has not advanced environmental benefits due to large agribusinesses in some cases co-opting organic certification, leading to weakened standards [48]. As previous scholars argue, another concern is how the myriad different food or eco-labels tied to agricultural certifications have overwhelmed consumers, making them less meaningful. Indeed, studies illustrate consumer confusion over food labels [49,50], while others have argued third-party verification requirements often shift power away from farmers [51].

Regenerative agriculture has recently been accelerated by private companies investing in regenerative agriculture sourcing programs, which define their own standards for enrolled farmers to follow [see [1] for examples]. This could be an alternative approach to certification, although if the purpose is to inform consumers, it may be unrealistic that consumers keep track of the sourcing programs for different brands from their food to clothing. Still, these private company programs have the potential to accelerate shifts in production practices’ outcomes. As an example, the McDonald’s Corporation is credited with mobilizing some of the US’s current animal welfare standards for beef and pork at slaughter due to their development of an auditing system in the 1990s that led to broad industry voluntary standards [52,53]. Integrating checks and balances between the private and public sector, as USDA has accomplished to some effect at livestock processing units, presents an opportunity to effect more change than a voluntary certification program alone.

To summarize, regenerative agriculture has emerged as a set of concepts focused on outcomes rather than practices, with a consensus among a wide range of stakeholders on key aspects of conceptualization. Two important tensions emerging from our study center on future research and practice trajectories. Participatory, farmer-driven research approaches are necessary for further innovation in regenerative agriculture, while concerns about the pitfalls of codifying regenerative agriculture in certification schemes are well-founded.
5. Conclusions

Regenerative agriculture has emerged as a set of concepts focused on outcomes rather than practices, with a consensus among a wide range of stakeholders on key aspects of conceptualization. Increasingly, stakeholders emphasize that context is essential when deciding on or recommending practices to reach these outcomes. This stipulates a necessary shift in the type of research that is considered of interest in agriculture, particularly from the point of view of farmers, who want to see more systems-based, nonreductionist research. Participatory, farmer-driven research approaches are necessary for further innovation in regenerative agriculture, but stakeholders are concerned about the pitfalls of codifying regenerative agriculture in some certification schemes. This sentiment is not only important for researchers to grasp and take initiative on, but for private companies, nongovernment institutions, and policymakers whose decisions and actions contribute to the current status quo of what research looks like.

Regenerative agriculture is currently viewed as a uniquely open area: farmers of all types are being invited to the table. Based on previous examples, certifications are seen as more exclusionary than facilitatory of catalyzing change. Private companies are demonstrating how they can use their considerable negotiating power to advance regenerative agriculture. While this movement is criticized as greenwashing, this has mobilized substantial funding toward research and supporting farmers. There is room for policy to help ensure the longevity of these efforts to help regenerative agriculture become the norm, as was the case in standardizing animal welfare in processing units.

Perhaps most importantly, farmers should be central in all of these efforts, as the leading innovators. Essential to this is recasting who is “seen” as a farmer, not to mention who is seen as an innovator. The long-held and continuously growing knowledge of Indigenous, Black, and Brown farmers has already been taken into regenerative agriculture: there is need not only for credit and acknowledgement but to be mindful of how that knowledge is taken up in very different scenarios and worldviews. Agricultural grants aimed at underserved farmers are important to enabling their continued work, but researchers should be more intentional to coproduce knowledge through participatory research.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su142215261/s1, survey instrument provides questions to guide interviews with different stakeholders on regenerative agriculture.

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