Swette Center for Sustainable Food Systems
Arizona State University

Regenerative Food Aims and Claims

Current state of food production and consumer attitudes

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Disclaimer: The views and perspectives represented in this paper are our own and do not reflect the views of our workplace.

Client Partner

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Executive Summary

Increasing consumer demand for sustainable and ethical products has sparked research interest among food retailers to identify and better understand factors which influence consumer decisions, willingness to pay, and the perceived value of regenerative labels. The purpose of this study is to explore consumer behaviors and motivations regarding regenerative products. The research team partnered with Sprouts Farmers Market on this study. Sprouts is a mid-tiered natural foods retailer interested in better understanding consumer interest in regenerative agriculture. The Sprouts team provided key insights into the natural food retailers' history with regenerative products in the U.S., as well as design support for the study's consumer survey. Sprouts also provided access to SPINS data on the sales of regenerative agriculture and organic products, which significantly informed the research for this study. The results and recommendations from this study can help Sprouts and other food retailers consider how and if they should invest in promoting regenerative products.

The research objectives are as follows: 1) to assess consumer awareness and understanding of regenerative agriculture 2) to identify the key factors that drive consumer purchases of regenerative products 3) to evaluate the willingness of consumers to pay a premium for products labeled as regenerative 4) to analyze demographic influences on purchasing behaviors and attitudes towards these products 5) to compare these trends to organic.

The literature review provides a robust view into the history, definitions, and consumer interest in regenerative agriculture. The literature review begins by exploring debates on the myriad of definitions for regenerative agriculture. Next, it looks at the history of regenerative agriculture, including the Indigenous roots of regenerative practices, and its evolution over time. It also explores the impact of regenerative agriculture on soil health and nutrient density. Additionally, the literature review details the role that certifications and labels play in influencing consumer trust and purchasing decisions. Studies suggest that the lack of a clear legal definition for regenerative has contributed to asymmetric labeling, or a variety of seals and certifications which make a wide range of regenerative claims. For this reason, consumers often lack a clear understanding of the value of regenerative. The literature review also uncovers gaps in research related to consumer awareness and limited data on consumer demand for regenerative.

In response to this gap, the research team designed a unique consumer survey in partnership with Sprouts to analyze consumer awareness, interest, and other trends related to regenerative agriculture. The survey questionnaire was designed to gather quantitative data from a diverse sample of consumers. The survey included questions

on purchasing behaviors, motivations, and preferences, with specific focus areas such as health benefits, environmental impact, and ethical considerations. Demographic data was also collected to analyze responses across different populations.

The survey data provided insights into consumer behavior regarding regenerative agriculture. In particular, the survey results highlighted a significant gap in many consumers' understanding of regenerative agriculture. Consumers who were familiar with regenerative agriculture cited health benefits, environmental impact, and ethical considerations as primary motivators for purchasing regenerative products. Lack of access to regenerative was cited as an impediment to purchasing, though it is unclear if this is due to a lack of regenerative product availability in stores or as a consequence of asymmetric labeling. According to the data, there is consumer interest in regenerative products. Survey participants did record a willingness to pay more for regenerative products, however, income level and familiarity with regenerative agriculture were correlated with participants' propensity towards buying regenerative products and their willingness to pay more for such products.

Additional research is needed to establish a comprehensive understanding of consumer behaviors related to regenerative agriculture. Due to the limited survey pool for this study, the research team suggests a larger sample pool be leveraged in future studies on this topic, in addition to more qualitative data to understand the complexities of consumers' purchasing motivations and habits. Given that people were more willing to pay for regenerative products when they better understood its meaning, investment in targeted consumer education and marketing efforts around the definition, health, and environmental benefits of regenerative agriculture is recommended to increase buy-in. As the limited availability of regenerative agriculture products and cost were cited as considerable reasons for not buying regenerative products, creating competitive pricing on select products, increasing access, and sourcing products that are clearly labeled as regenerative may have a positive impact on regenerative sales outcomes.

Introduction

Regenerative agriculture is an ancient concept that has re-emerged in recent years, offering alternative farming practices that limit the human health and environmental issues linked to industrial agriculture. Unlike other types of alternative agriculture, like organic, regenerative has no legal definition. A myriad of definitions exist, ranging from a set of principles, to a list of practices, to environmental outcomes. In this study, many definitions are examined.

Even without a clear definition, regenerative agriculture is touted by multinational corporations, environmental organizations, and others as a way to restore soil health and combat climate change. There are a plethora of labels and certifications which can be hard to navigate for both farmers and consumers. During the rise of organic, the number of organic labels on the market became so overwhelming for consumers that the USDA intervened, ultimately resulting in the USDA National Organic Program. This study examines just 12 of the many regenerative certifications, while also recognizing the growing number of regenerative food labels among smaller brands.

From farms to food producers to grocery stores, there is significant investment in regenerative agriculture marketing. Yet, consumer perspective on regenerative agriculture remains widely unaddressed in literature and discourse. This study seeks to better understand consumer perspectives on regenerative agriculture to determine if and how food retailers should invest in driving demand for regenerative agriculture.

Partnership with Sprouts

Sprouts Farmers Market, a national natural grocery chain, has also been grappling with this question: what do consumers think about regenerative agriculture? Sprouts Farmers Market has been increasing the number of regenerative products on their shelves and has supported a few regenerative agriculture in-store promotions. During their 2024 Earth Month sale, Sprouts highlighted brands like Alec's Ice Cream, Ancient Nutrition, Gaia Herbs, A2 Milk, Goodsam, Moonshot, Lundberg, and Simple Mills as leaders in the regenerative agriculture movement. Without understanding consumer perspectives, though, it is difficult to determine if the effort is worth it. Sprouts Farmers Market's sustainability and marketing staff partnered with Arizona State University's Swette Center for Sustainable Food Systems to support this research. Sprouts provided the research team with systems context, survey design expertise, and a platform for disseminating a custom consumer survey to its customers. This partnership allowed the research to go even deeper, examining the difference in consumer perspectives, interests, and understanding of regenerative agriculture across and between the general population and a natural foods consumer base.

Methodology

Introduction

The purpose of our research is to understand consumer perspectives on regenerative agriculture in the U.S., providing meaningful insights on whether food retailers should invest in further driving demand for regenerative agriculture and if so, which strategies they can incorporate to drive demand. A mixed-methods research approach was used for the completion of this study. The research methodology consists of a literature review and survey. The following sections will detail aspects of the research concerning research design, data collection, and data analysis.

Literature Review

The research team conducted a literature review examining the current findings on, and perceptions of, regenerative agriculture. Proquest, Science Direct, JSTOR, The Lancet, Frontiers, and Google Scholar databases were used to identify and review published research articles on regenerative agriculture and consumer trends. In total, over 100 articles were examined during the literature review. Search terms included:

- Defining regenerative agriculture
- Regenerative agriculture and consumer marketing
- Regenerative agriculture certification
- Evolution of regenerative agriculture
- Soil health
- Soil health and climate change
- Human and planetary health
- Organic certification standards
- Regenerative standards
- Soil carbon sequestration
- Nutrient density
- Organic food labeling
- Organic certification and natural food labels
- Eco food labels and consumer fatigue

A mix of peer reviewed and multimedia sources played an integral role in shaping the literature review. Throughout our research, prominent sources emerged: Agriculture and Human Values, Civil Eats, Frontiers in Sustainable Food Systems, *International Journal of Food and Agricultural Economics*, Kiss the Ground, MDPI Sustainability, SPINS,

USDA Agricultural Marketing Service, and the U.S. Environmental Protection Agency. The literature review also relied on the Rodale Institute, which is not universally viewed as an impartial source given their advocacy efforts.
When searching for articles that would be included in the literature review, the following topics were considered: definitions of regenerative agriculture, the history of regenerative agriculture, environmental and social impacts of regenerative agriculture, history of organic certification, regenerative agriculture certifications, consumer trends, and opposing views in the field of regenerative agriculture. Articles were chosen based on their relevance to the project, the quality of research, and credibility. Peer-reviewed articles were given priority whenever possible, as were articles published after 2014. This approach mobilized a critical analysis and understanding of the field of regenerative agriculture, its history and potential role in climate mitigation, as well as current tensions around defining regenerative agriculture and asymmetric labeling.

Survey

A market research survey was conducted to better understand consumer perspectives on regenerative agriculture. The survey, designed in collaboration with Sprouts Farmers Market, aimed to explore various aspects of retail food purchasing behavior, values, and reasoning. Specifically, it examined consumer understanding of regenerative, willingness to pay for regenerative agriculture products, the influence of product type and labeling, and demographic factors. The detailed survey questionnaire is available in Appendix D. Approval for this study was obtained from Arizona State University's Institutional Review Board before the survey's disbursement.

The survey was designed and administered using Qualtrics. Researchers utilized a dual recruitment strategy to secure survey participants. Prolific, an online platform that connects researchers with participants for online studies, was utilized to recruit survey participants from the general population. A representative sample distribution was used to recruit participants to more accurately reflect the demographic distribution of the United States. Prolific survey participants are considered professional survey-takers as a $1.57 incentive was offered upon successful completion of the survey. The added financial incentive allowed us to quickly meet the general population consumer quota. To recruit Sprouts customers to participate in the survey, an email containing the Qualtrics link was sent to Sprouts customers who had previously signed up for the Sprouts Rewards Program. The latter allowed for a more targeted understanding of the relationship our client partner's customers have with regenerative agriculture. No incentive was used to recruit Sprouts Market participants. The promotional material distributed recruited individuals 18 years or older in the mainland United States for voluntary anonymous participation in a 26-question survey, taking approximately 5-8

minutes to complete.

Participants were required to provide consent to participate in the survey. The consent process was streamlined by embedding a consent screening form as a precursory page to the survey. This form included an abbreviated consent statement, a link to the full consent form, a checkbox field for participants to indicate consent (“Yes- I consent to the terms of the survey”), and a signature line. The full consent form detailed information about the research project, the research team, and the voluntary, anonymous nature of the study. Participants’ rights, the minimal risks associated with participation in the study, and contact information for the research team and the ASU Office of Research Integrity and Assurance were also documented. No response was recorded for those who chose not to consent and waived their right to participate in the survey. The General Population Survey Promotion Script, Sprouts Survey Listserv Promotion Script, and the detailed Survey Consent Form are available in Appendices A, B, and C, respectively.

The survey began with an introduction to key terminologies, providing participants with background on USDA Organic Certification and regenerative agriculture. The first segment of questions pertained to regenerative and organic product purchasing habits, rationale for their choices, and purchasing barriers. Succeeding questions in this section were customized based on participants' initial answers to ensure relevance (i.e. – “skip logic” was used).

The next segment of questions focused on consumer price sensitivity by assessing how much participants were willing to pay for various products, including conventional, USDA Certified Organic, and regenerative options. Sliding scales were used to capture a range of price sensitivities and perceptions of value. Participants were then asked to rank the importance of product attributes, such as organic, locally grown, or Fair Trade. This segment of questions provided further insight into consumer decision-making.

Next, the influence of product labeling was explored through a series of scenarios and comparative questions to evaluate how product labels and marketing claims influenced purchases.

The final segment of questions collected demographic data on gender identity, age, household income, quantity of dependent children in the household, and geographic location. Responses to these questions were used to cross-compare purchasing habits based on demographics.

Data was analyzed for distinct features relating to purchasing behaviors, and

demographics. Bar charts, pie graphs, and cross-tabulations were used as visual supports for data interpretation and digestibility. The data analysis focused on directional trends rather than statistical significance, emphasizing general tendencies in consumer behavior. Open-ended responses from participants were also analyzed to better understand consumer perspectives and behaviors. The data analysis conducted can be used by producers, brands, and retailers to inform marketing strategies for regenerative products. The survey questionnaire and detailed results can be found under Appendices D and E, respectively.

Limitations of Study

Throughout review of existing literature, the research team identified a gap in research and studies that focus on various approaches that aim to advance regenerative agriculture. There is evidence of some stakeholders advocating for a more “purist” approach, in which regenerative standards must merge with existing organic standards. This approach emerged from the concern that creating an all-new certification for regenerative agriculture would confuse consumers, add expenses for farmers, and lower the standards in defining regenerative agriculture. Meanwhile, others advocate for a broader “big tent” approach that is inclusive to all stakeholders that express interest in incorporating a variety of regenerative practices. This approach is based on the commitment of taking swift climate action, which would need to include large corporations interested in adopting any regenerative change. This contentious debate is an emerging topic in the study of regenerative agriculture, however, there is not enough scholarly research to study the stance and potential of both approaches. Without further insight, food-retailers and other stakeholders lack guidance on how to invest their efforts. This existing gap in research is a primary reason why this team has chosen to undertake this study.

As the popularization of regenerative agriculture in academic research and mainstream media is relatively new, insufficient peer-reviewed data exists within the field. Limited data exists on the sales of regenerative products. Most of the available sales data pertains to Regenerative Organic Certification (ROC – an industry-created standard that is starting to gain wider acceptance) products or products labeled "regenerative organic" under different certifications. There is limited peer-reviewed research on the scientific aspects of regenerative agriculture. While the majority of articles defining regenerative practices are peer-reviewed, the long-term outcomes of the practices have yet to be substantiated.

The lack of research on current regenerative labels also posed challenges to research. However, 16 regenerative certifications were identified via desktop research and are

discussed in the literature review. Notably, there is no legal definition of regenerative agriculture at this time. The lack of a consistent definition posed challenges to referencing the term and difficulty in cross-referencing literature and data throughout the literature review. Only English language texts were used for the purposes of this research. As such, there is likely quality data available in other languages and non-English speaking regions that were not accessed for this research. Additionally, limited research exists on consumer-focused regenerative agriculture studies. For a more comprehensive literature review, more diverse and scientifically backed research is needed on subject matters that relate to regenerative agriculture.

In regard to the survey, aspects of the research methodology pose limitations on its applicability towards understanding consumer trends. Barriers to participation in the survey exist that limit the participant pool. The survey was only available in English, to those 18 years or older who agreed to the terms of the survey. Additionally, the survey was only available electronically, with no paper version offered for those without internet access or limited digital literacy. Participants were recruited through Prolific and the Sprouts Rewards Program. While a representative sample distribution was used in Prolific to recruit participants to more accurately reflect the demographic distribution of the United States, given that only two avenues were used to recruit participants, the survey data may not accurately reflect the broader U.S. population. The survey received 312 general population survey responses and 90 from Sprouts. While the survey results help glean insights on consumer trends and behavior, the survey pools are not statistically significant enough to accurately reflect broader consumer trends within the U.S. Though the research team anticipated more responses from the Sprouts Rewards Program, challenges arose with the distribution of the survey that impeded the response rate. Due to this, the research team was unable to establish a statistically significant data set based on the Sprouts Rewards Program Customers. However, the Sprouts participants were self-selected natural foods consumers. Typically, a natural foods retailer would be more likely to rollout regenerative products, given their consumer base. This self-selected sample, while not statistically significant, may provide valuable insights for natural food retailers like Sprouts in their marketing of regenerative products. Finally, the median income of both survey participant groups was higher than the overall U.S. median income. Given this, our survey data may not accurately reflect the purchasing habits and behaviors of the broader U.S. population, particularly those in lower income brackets (U.S. Bureau of Labor Statistics, 2024).

Literature Review

Regenerative Agriculture is not having a moment - it is becoming a movement. Whether it's Big Food companies like General Mills (Wozniacka, 2019b), B-Corps like Patagonia Provisions (Patagonia Provisions), or hundreds of companies branding products as regeneratively grown at the 2024 Natural Products Expo West (Expo West, 2024), the interest among food producers is as vast as it is complicated. Despite this sensationalizing of regenerative agriculture there is limited research on consumer perspectives.

This literature review will discuss current definitions of regenerative agriculture, acknowledge the Indigenous roots of regenerative agriculture, review the proliferation of food labels, discuss existing literature regarding consumer perspectives, and identify emerging topics and lingering gaps in current research surrounding regenerative.

Defining Regenerative Agriculture

The clearest theme that arose from the literature is that there is no single definition for regenerative agriculture. In the 1980s, Robert Rodale defined regenerative agriculture as:

> …one [practice] that, at increasing levels of productivity, increases our land and soil biological production base. It has a high level of built-in economic and biological stability. It has minimal to no impact on the environment beyond the farm or field boundaries. It produces foodstuffs free from biocides. It provides for the productive contribution of increasingly large numbers of people during a transition to minimal reliance on non-renewable resources. (Giller et al., 2021)

However, definitions associated with regenerative agriculture have continued to evolve since the 1980's. Today, regenerative agriculture can often be defined through a set of principles, a set of farming practices, a set of outcomes, or a combination of the three (Sands et al., 2023).

For example, a definition focused on principles may describe regenerative as: "Farming principles designed to mimic nature with the goal of rebuilding healthy soils to feed the planet's growing population, increasing resilience to climate change while creating thriving farming communities and empowered landscape stewards" (Marano, 2022) or "There's no strict rule book, but the holistic principles behind the dynamic system of regenerative agriculture are meant to restore soil and ecosystem health, address inequity, and leave our land, waters, and climate in better shape for future generations" (NRDC, 2021).

However, a definition focused on practice might suggest:

> Regenerative agriculture, a term that is often used synonymously with “carbon farming,” is a set of practices—from cover crops and no-tilling to compost application and managed grazing—that builds organic matter in the soil, effectively storing more water and drawing more carbon out of the atmosphere. (Wozniacka, 2019b)

Rehberger et al offer another practice-based definition:

> Although definitions of regenerative agriculture may vary, common practices include no or reduced till, cover cropping, crop rotation, reduced use or disuse of external inputs such as agrichemicals, use of farm-derived organic inputs, increased use of perennials and agroforestry, integrated crop-livestock systems, and managed grazing. (Rehberger et al., 2023)

Meanwhile, a definition focused on outcomes claims that regenerative is "an outcome-based farming approach that protects and improves soil health, biodiversity, climate, and water resources while supporting farming business development" (SAI Platform, 2023, 4).

Moreover, there is an ongoing debate between process and outcome-based definitions for regenerative agriculture. Process-based definitions are typically:

> …focused on the inclusion or exclusion of one or more agricultural principles and/or practices (e.g., the integration of crops and animals, the use of no-till agriculture, the use of cover crops) that define what types of agriculture may be considered regenerative. (Newton et al., 2020, 6-7)

Process-based definitions generally believe that “unless one can be absolutely certain that a particular practice always and without exception leads to a particular outcome, a definition of regenerative agriculture that is based on process(es) may imply agnosticism about the outcome(s)” (Newton et al., 2020, 7). Meanwhile, outcome-based definitions are typically “focused on one or more agricultural outcomes (e.g., carbon sequestration, changes in soil health, changes in biodiversity) that define what types of agriculture are considered regenerative” (Newton et al., 2020, 7). Carbon sequestration is defined by the United States Geological Survey as “The process of capturing and storing atmospheric carbon dioxide, which is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change” (USGS).

Outcome-based definitions may be less concerned with the processes required to meet an outcome, so long as the outcome is being met (Newton, et al., 2020). A process-based definition believes:

> …burden of proof may rest with any producer, practitioner, or proponent operating under such a definition of regenerative agriculture to test what the outcomes of those definitional processes are before making any claims about the efficacy or utility of those processes. (Newton et al., 2020, 7)

An outcome-based approach would allow processes that are not typically associated with regenerative agriculture, as long as those processes contribute to achieved outcomes. However, some experts describe regenerative agriculture as a combination of principles, practices and outcomes. For example, Sands et al. assert "Broadly, regenerative agriculture refers to a suite of alternative principles, practices, or outcomes which seek to actively build back soil health, biodiversity, climate, ecosystem function, and improve socioeconomic outcomes" (Sands et al., 2023, 3). Meanwhile, there are groups, like the TABLE, a global platform for knowledge synthesis, for reflective, critical thinking and for inclusive dialogue on debates about the future of food (Cusworth and Garnet, 2023) who go as far as to provide definitions for regenerative agriculture practices, principles, and outcomes, respectively (Cusworth and Garnet, 2023). These diverging approaches further complicate the defining of regenerative agriculture.

Some literature analyzes the complexity of defining regenerative agriculture. In 2020, Newton et al. found 229 journal articles and 25 organizations which either describe or define regenerative agriculture (Newton et al., 2020). Out of the 229 journal articles, only 22 provided a clear definition of regenerative agriculture, while 99 provided a loose description, and the remaining 108 used the term regenerative agriculture without providing a definition (Newton et al., 2020).

In the efforts to define and shape the future of regenerative agriculture, there are generally two approaches employed by stakeholders to advance the regenerative movement. These perspectives are sometimes referred to as “big tent” and “purist.” Wilson et al. seeks to better understand these perspectives in *Different Stakeholders’ Conceptualizations and Perspectives of Regenerative Agriculture Reveals More Consensus Than Discord.* In this study, the authors interviewed farmers, researchers, individuals from the nonprofit or philanthropic sector, and private companies about their perspectives on regenerative agriculture (Wilson et al., 2022). They found three major themes throughout stakeholder interviews: climate adaptation and mitigation, socio-economic benefits, and integrated systems. Participants’ definitions most often included soil health, biodiversity, and community resilience (Wilson et al., 2022). Participants, across stakeholder groups, also shared that a broad definition of regenerative agriculture will be essential for its growth while only two of the 19 stakeholders interviewed suggested that regenerative agriculture must start with organic standards (Wilson, et al., 2022), which is often considered a “purist” approach. The dominant point of view in Wilson et al.’s study was that regenerative agriculture remains a “big tent,” or

broad tent, not narrowly defined and open to all. Defining regenerative agriculture will play a significant role in its inclusivity and impact. While it is sometimes believed that “big tent” and “purist” perspectives contribute to politically charged discourse surrounding regenerative agriculture, Wilson et al. suggests that the multiplicity in definitions across this study offer some consensus in efforts to define regenerative agriculture. However, it should be noted that outside of Wilson et al.’s study, scholarly research on “big tent” and “purist” perspectives remains limited.

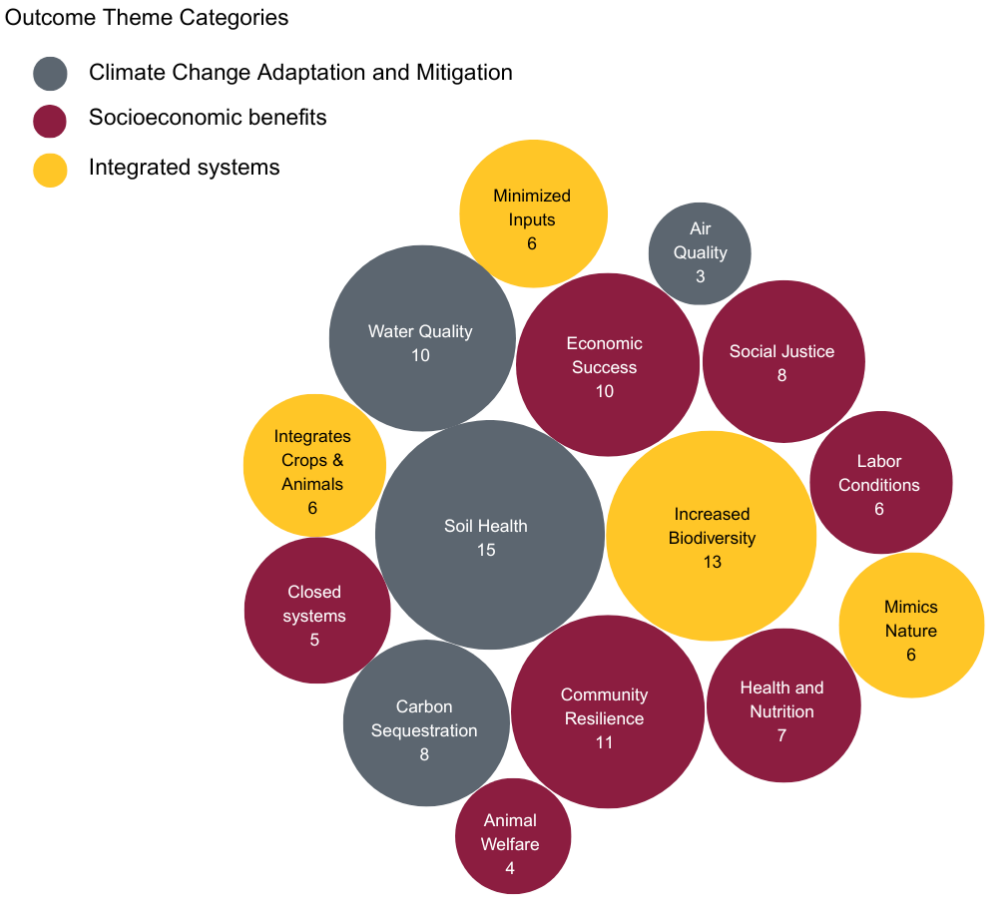


Figure 1: Regenerative agriculture outcome theme categories and subcategories. Each size of the bubble corresponds with the number of participants who referenced the named outcome, with larger bubbles representing more participant references to indicate which outcomes were most prominent. Note: Numbers are not statistically significant (Wilson et al., 2022).

Despite the many efforts to define regenerative agriculture (General Mills; Project Drawdown; The Nature Conservancy; Wozniacka, 2019a; Wozniacka, 2019b; Newton et al., 2020; Giller et al., 2021; NRDC, 2021; Marano, 2022; Bless et al., 2023; Khangura et al., 2023; Rehberger et al., 2023; SAI Platform, 2023; Sands et al., 2023) major differences remain. Many experts believe there will never be a standard definition

for regenerative agriculture. Some appreciate this ambiguity because it leaves room for fluidity as regenerative agriculture continues to evolve. This ambiguity is perhaps more relevant for process- or principle-based approaches to regenerative agriculture (Khangura et al., 2023). Others caution that ambiguity (Wozniacka, 2019b) and a lack of metrics (Ladenheim, 2024) could lead to greenwashing. While others point out that without a clear definition, conducting research on the benefits of regenerative agriculture can be difficult since it can mean so many different things (Newton et al., 2020; Khangura et al., 2023).

Because there is no one definition, the literature referenced in the remainder of this paper may be based on varying definitions of regenerative agriculture, and therefore, there are some contradictions in the data. Across the wide-ranging definitions is a general theme of rejuvenating soil and caring for the land.

Acknowledging the Indigenous Roots of Regenerative Agriculture

Today's concepts of regenerative agriculture can be traced back to Indigenous agricultural practices. Prior to the colonization of the Americas, Indigenous people relied on local food systems and farming methods, which encompass practices now frequently associated with regenerative agriculture (Sands et al., 2023). Many experts have called for the need to recognize the contributions of Indigenous peoples in today's regenerative movement (Kiss the Ground-a; Cusworth et al., 2022; Bless et al., 2023; Sands et al. 2023). Marta Fiolhais with the Rainforest Alliance asserts:

> When you take into account that the few remaining Indigenous lands are home to 80 percent of the world's biodiversity, while modern industrial agriculture is responsible for 80 percent of global deforestation, it's clear that Western society still desperately needs to learn what Indigenous people have known for millennia: that human beings must live in a reciprocal relationship with the Earth. (Fiolhais, 2023)

Indigenous farming practices that are considered regenerative today include no till, crop rotation, intercropping, rotational grazing, agroforestry, silvopasture, soil amendments, cover crops, and biochar (Sands et al., 2023). During the 19th century, Western plow technology emerged and increased yields, prompting the introduction of tillage in American agriculture (Sands et al., 2023). By the 1930's, tillage was known to contribute to soil erosion with devastating consequences as seen during the Dust Bowl (The Climate Reality Project, 2022; Sands et al., 2023). Sands et al. reference a famous interaction which illustrates Indigenous perspectives of tilling: "A well-known account from the late 19th century describes an Indigenous American who observes white

settlers plowing a field for the first time and simply says ‘wrong way up’" (Jackson 1987) (2023, 1705-1706).

The most familiar example of intercropping may be the “three sisters” (The Climate Reality Project, 2022; Sands et al., 2023). This Indigenous agriculture practices intercrops maize, or corn, with beans and squash.

When grown together, the three sisters “enhance soil nutrient availability, improve soil health, and suppress pests, weeds, and disease” (Sands et al., 2023, 1701). The term “polyculture” is typically used in place of intercropping as a practice associated with regenerative agriculture (The Climate Reality Project, 2022). According to Sands et al., “Grazing ungulates and grasslands have co-evolved over a period of 55−45 million years (Stebbins 1987)” (2023, 1707). Cover crops were used by Indigenous peoples prior to colonization and this was a farming practice adopted by settlers (Sands et al., 2023). George Washington Carver even encouraged the use of cover crops like buckwheat to prevent soil erosion (Soul Fire Farm, 2012). After WWII, farmers gained access to pesticides and synthetic fertilizers, which transformed farming in the U.S. and resulted in a steep decline in the use of cover crops.

Biochar, or “cultural burning,” is a practice used by various Indigenous communities throughout South and North America to improve biodiversity (U.S. National Park Service, 2024). Today, controlled burns are a practice associated with regenerative agriculture (Sands et. al). Some groups go as far to assert: “As European colonizers spread across the United States, fire suppression became more common. Without cultural burns, organic matter built up, putting forests at risk of devastating wildfire” (U.S. National Park Service, 2024). Indigenous farming practices have greatly contributed to the Western understanding of regenerative agriculture.

The congruence of Indigenous farming practices and practices associated with regenerative agriculture today has prompted experts to suggest a return to Indigenous agricultural practices. Arohi Sharma, a water and agriculture policy analyst from the Natural Resource Defense Council (NRDC), shares: “The regenerative agriculture movement is the dawning realization among more people that an Indigenous approach to agriculture can help restore ecologies, fight climate change, rebuild relationships, spark economic development, and bring joy” (NRDC, 2021). Georgia Wluka with the Environmental and Energy Policy Institute claims: “Indigenous agricultural practices are often less extractive and better for long-term, full-ecosystem health” (Wluka, 2023). Some scholars have even provided an anticolonial definition for regenerative agriculture:

> A way of farming comprised of entangled values and practices, and founded in Indigenous principles of loving-caring for the Earth. This approach to farming values 1) reciprocity, 2) respect, 3) collective (human and non-human) wellbeing, 4) knowledge cocreation, and 5) (re)localization, and it is often practiced through some combination of 1) minimizing soil disturbance, 2) maintaining vegetative soil cover, 3) maximizing diversity, 4) integrating livestock, and 5) minimizing synthetic agrichemicals. (Sands, et al., 2023, 1712)

Regenerative agriculture sets the stage for principles, practices, and outcomes which aim to restore the land; an anti-colonial approach goes further by urging us to act in a way that is relational and loving to the land (Sands et. al., 2023). While it may be challenging to consider regenerative agriculture beyond a more westernized perspective, Sands et al. suggests that “dismissive or negative reaction is itself a symptom of the silencing, exclusion, marginalization, and continued colonization of Indigenous worldviews” (Sands et al., 2023, 1711).

From Then to Now: How has Regenerative Agriculture Evolved Over Time?

It is generally agreed that Robert Rodale of the Rodale Institute began to popularize the term "regenerative agriculture” in the 1980s (Rodale Institute); but the phrase was actually coined by Medard Gabel in the 1970s (Bless et al., 2023). While regenerative agriculture moved from a thought to a more defined term in the 1970s and 1980s, most of the literature suggests that regenerative agriculture did not become popularized until the mid-2010’s (Giller et al, 2021; Bless et al., 2023) In *Regenerative Agriculture: An agronomic perspective* Giller et al. found:

> Regenerative Agriculture and Regenerative Farming first appear in the Nexus Uni database of news stories in 1983 and 1986 respectively, both with reference to the Rodale Institute, and neither term occurred in more than 15 news items each year until 2009. Their use increased dramatically after 2016, and since then the combined occurrence of these terms has doubled each year, reaching 6,163 news items in 2020. To place this in perspective, in 2020 organic agriculture and organic farming appeared in 6,870 and 18,301 news items respectively” (Giller et al., 2021).

While Giller et al. highlight a dramatic increase in the use of the term regenerative, there were key documents that emerged throughout the research prior to 2016 that could have also contributed to regenerative agriculture’s boost in popularity. One example is the Rodale Institute’s 2014 white paper, which issued a stark warning of the anthropocene and offered regenerative organic agriculture as the solution to combat climate change through carbon sequestration (Rodale Institute, 2014). In this paper, the

Rodale Institute describes regenerative organic as "… comprised of organic practices including (at a minimum): cover crops, residue mulching, composting and crop rotation. Conservation tillage, while not yet widely used in organic systems, is a regenerative organic practice integral to soil-carbon sequestration" (Rodale Institute, 2014, 10). The Rodale Institute found that regenerative organic agriculture could "sequester more than 100% of current annual CO2 emissions with a switch to widely available and inexpensive management practices" (Rodale Institute, 2014, 2) like cover crops, residue mulching, composting, and crop rotation (Rodale Institute, 2014).

The Food and Agriculture Organization (FAO) declared 2015 the International Year of the Soils (FAO United States, 2015a). With this declaration came the release of the 650 page *Status of the World's Soil Resources* (FAO and ITPS, 2015), which found the bulk of the world's soils to be in fair, poor, or very poor condition (FAO and ITPS, 2015) and that, without action to protect and restore our soils, there will be only 60 years of harvests left (FAO US, 2015b). While this report did not explicitly mention regenerative agriculture, it was certainly one of the catalyzing moments for regenerative agriculture's boost in popularity. The use of celebrity champions in the documentary Kiss the Ground also provided a boost of interest and engagement in regenerative (Bless et al., 2023).

The Intersection of Soil Health and Climate Change

The discussions that surround climate change often focus on the sectors of energy, transportation and the built environment. However, agriculture systems play a large role in the effects of climate change and must be considered a key player in climate action (Hale, 2023). Hale provides the following data to emphasize the food industry's role in climate change: "Agriculture is the leading source of methane emissions caused by human activities. In 2020, 42% of methane emissions came from agriculture, with livestock emissions and paddy rice cultivation accounting for 32% and 8% of agricultural methane respectively" (Hale, 2023).

Globally, the IPCC estimates that land use, forestry, and agricultural production are responsible for 22% of total global greenhouse gas emissions (IPCC, 2022). The extent of regenerative agriculture's ability to mitigate climate change is still being studied, but carbon sequestration remains a driving force behind its potential. Certain groups caution that regenerative agriculture lacks substantial scientific studies to support climate impact claims (Jordan et al., 2022); others suggest extensive research is not necessary to begin transitioning away from conventional practices that are known to be harmful to the climate and towards regenerative agriculture's potential benefits (Nutrient Density Alliance, 2024).

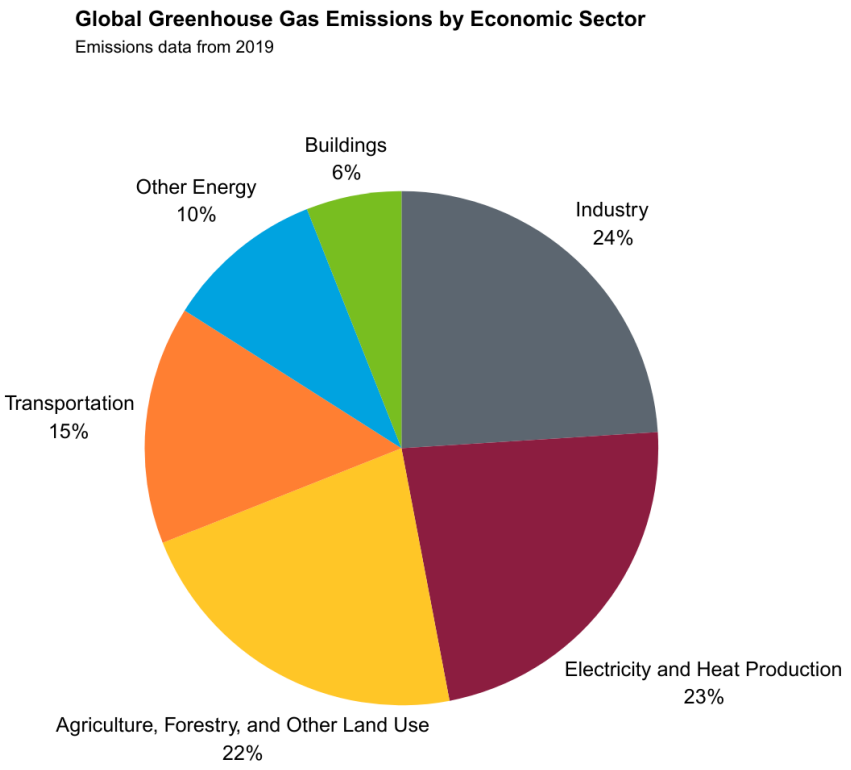


Figure 2: Visualization of Global Greenhouse Emissions by Economic Sector (IPCC, 2020)

The effects of climate change on soil continue to be researched. A study analyzing physical, chemical and biological properties of soil impacted by climate effects uncovered that climate change has negatively impacted soil health through soil temperature, soil surface cover, organic matter, fertility, nutrient availability, and C:N ratio (Patil and Lamnganbi, 2018). Conventional farming practices are depleting soil and soil carbon stock, emitting N2O, and rapidly mismanaging land use (Rodale Institute, 2014). Instead of mitigating climate change through carbon sequestration, food production practices are a large producer of greenhouse gas emissions.

The five-principle interconnected global carbon pools are oceanic, atmospheric, pedologic, biotic and fossil fuel (Lal, 2010). Carbon dioxide circulates through all pools but conventional farming has contributed to the imbalanced transfer to atmospheric carbon (Lal, 2010). A Rodale Institute white paper covering climate change measured that if crop and pasture lands were managed regeneratively, more than 100% of current annual CO2 emissions would be sequestered, resulting in rapid negative emissions (Rodale Institute, 2020). Even when more conservative measurements were made, carbon sequestration could easily keep annual emissions within their desired lower end range of limiting warming to 1.5°C above pre-industrial levels (Rodale Institute, 2020).

The estimates of potential reduced gas emissions through carbon sequestration vary by study. Another study conducted at Ohio State University found that soil carbon sequestration practices could offset measurements of one-fourth to one-third of the annual atmospheric CO2 emission (Lal, 2004). Nevertheless, studies across the board show soil carbon sequestration as an aid in climate regulation through reduced atmospheric CO2 emissions. Other general benefits across multiple studies show implementing soil carbon sequestration could improve soil organic matter and create more crop nutrients availability (Mosaic, 2022) as well as improve food security (Lal, 2004).

The Role of Regenerative Agriculture in Supporting Planetary and Human Health

Organizations like Rodale Institute consider regenerative agriculture a practice that goes beyond sustainability (Rodale Institute). Many definitions of regenerative agriculture include the intention to reduce the negative impact of human activities on the planet with practices which have also been found to benefit human health (Anto, 2014). The United Nations has implemented climate initiatives such as the Paris Agreement and the Sustainable Development Goals (SDGs) to provide opportunities for adaptation and mitigation action in agriculture that impacts human and planetary health (FAO). In 2015, the UN introduced the 2030 Agenda for Sustainable Development as a result of global partnerships, committing to 17 goals including zero hunger, improving health and wellbeing, taking climate action and implementing responsible consumption and production (United Nations). In 2016, the Paris Agreement took force as a legally binding international treaty to limit global warming and implement economic and social transformations through increasingly ambitious climate action goals (UNFCCC). The commitment to these goals speaks to the complexity and interconnectedness of planetary and social wellbeing, in which case, one cannot be achieved without the other.

A 2021 study analyzing global resource demands and their calculated greenhouse gas emissions created scenarios to include the planned policy implementation of the Paris Agreement and SDGs to determine the impact of these goals (Hamilton et al., 2021). The study uncovered that well designed mitigation policies aligned with the SDGs and the Paris Agreement across energy, built environment and agriculture could result in cleaner air, healthier diets, and reduced health-care costs over time, outweighing the initial cost of the policy (Hamilton et al., 2021). To make significant progress in these goals, collaborative efforts across agriculture amongst farmers, government and businesses could be essential.

Agriculture remains at the intersection of social and environmental concerns. The Sustainable Agriculture Network, a global cooperative, now aligns itself with all 17 SDGs to amplify the potential impact agriculture carries in reaching these goals (SAN, 2023). SDGs aim to reverse damages and balance human and planetary co-benefits (United Nations). The complexity of balancing these interconnected co-benefits can be seen in detail in the Doughnut of Social and Planetary Boundaries, developed by British economist Kate Raworth.

Aside from achieving planetary and social goals, regenerative agriculture could have a lasting impact on localized health and wellness. A study analyzing the impact regenerative agriculture has on community found it could improve planetary and human health by fostering relationships between farmers, communities and environment (Goldwater, et al., 2024). In an interview with 31 farmers who self-identify as regenerative, 93.6% mentioned altruistic factors such as social responsibility or collective health and well-being as reasons for practicing regenerative agriculture (Goldwater, et al, 2024). Farmers cited many human-centered reasons for practicing regenerative, including protecting their community's agriculture and ecosystem, cultural attachment to the land, and a desire to pass on "healthy landscape" to future generations. These interviews collectively highlighted the concept of regenerative agriculture as seeing human and non-human life as interdependent, while considering ecosystem stewardship as a necessary part of the human experience (Goldwater, et al., 2024).

Effects of Soil Health Depletion on Nutrient Density

Conventional farming practices, such as monocropping, and excessive chemical use and tillage, have adversely impacted soil health. This has prompted scientists to explore the connection between soil health and nutrient density, as seen in the 2024 Nutrient Density Alliance white paper (Nutrient Density Alliance, 2024). Brands like Painterland Sisters and Alexandre Family Farms even claim that their regenerative products are nutrient dense (Painterland Sisters; Alexandre Family Farms); however, there are significant gaps in research connecting regenerative growing practices and nutrient density. Similar to regenerative agriculture, nutrient density is a term that is yet to be clearly defined. Definitions could be as ambiguous as food that is high in nutrients but low in calories (National Cancer Institute) to the quality of food measured by calculating the vitamins, minerals, antioxidants and polyphenol properties found in foods (Farmer's Footprint).

A 2022 study from the University of Washington compared identical test crops grown across 10 different farms, half the farms identifying as regenerative and the other half conventional. David Montgomery, co-author of this study, stated, “We couldn’t find studies that related directly to how the health of the soil affects what gets into crops, so we did the experiment that we wished was out there” (Hickley, 2022). In this study, Montgomery and Anne Bikle found that farms self-identifying as regenerative for at least five years farmed crops that were shown to have higher phytochemical levels, such as antioxidants and anti-inflammatory compounds, while conventionally farmed crops were found to have higher levels of pesticides (Montgomery and Bikle, 2021). This study supported that farming systems do have an impact on micronutrient levels, specifically vitamins, minerals and phytochemicals, which are all more nutritious and beneficial for human health (Montgomery and Bikle, 2021).

While the literature remains limited, some peer-reviewed studies have found that depleting soil organic matter results in soil having less water retention and fewer nutrients available for the crops (DPIRD, 2022), resulting in a steady decline of nutritional quality of many foods produced today. A 2004 study analyzed the USDA nutrient content data published for 43 different crops from 1950 to 1999. The study found some crops had shown nutrient declines of up to 38% (Davis et al, 2004).

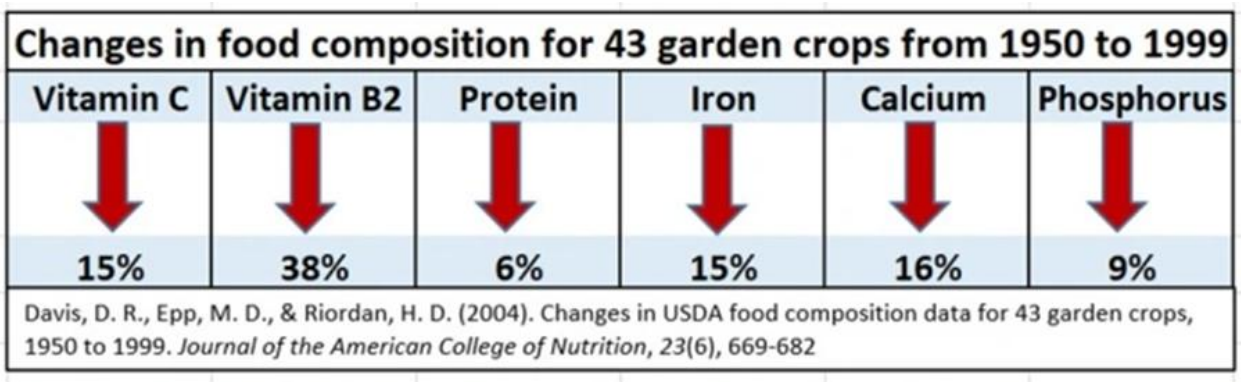


Figure 3: Visualization of changes in food composition for 43 garden crops from 1950 to 1999 (Davis et al., 2004)

The evolution of growing practices over time has changed food yield and production significantly. While the high yields obtained through conventional farming support a growing population, nearly 3 billion people globally are still suffering from nutrient deficiency (Farmers Footprint). Prioritizing high yields has the potential to compromise nutrient density in the food system (Farmers Footprint). Although extensive knowledge of regenerative agriculture’s potential ability to increase food nutrient density is limited, regenerative practices such as crop rotation and reducing chemicals are considered beneficial to soil health and nutrient content of the soil (Scientific American, 2011).

Proliferation of Food Labels

Food labeling has transformed the consumer experience. In today's market, consumers are bombarded with food labels and certifications making a range of health and environmental claims. Experts often describe this phenomenon as asymmetric labeling, which means a seller has more information about the product than the buyer, or vice versa (Golan et al., 2000; Kolodinsky; 2012; Sackett et al., 2016). Experts like Golan et al. and Sackett hold a negative view of asymmetric labeling as it reduces market efficiency (Golan et al., 2000; Kolodinsky, 2012; Sackett et al., 2016). In *Persistence of Health Labeling Information Asymmetry in the United States: Historical Perspectives and Twenty-First Century Realities,* Kolodinsky suggests:

> The current approach to labeling regulation in the United States, combined with businesses' rush to profit from the latest social trend, leaves the consumer in a world where he/she must make choices among hundreds of products with hundreds of label claims, most of which are sound bites that often provide misleading or very little useful information. (Kolodinsky, 2012, 203)

An example of federal intervention that addressed asymmetric labeling is the 1990 Organic Foods Production Act (OFPA) and the subsequent introduction of the USDA Organic seal. Golan et al. viewed the large amount of public reaction to the USDA's first proposed rule for a national organic food standard in 1997 (275,000 comments, largely negative) as evidence that U.S. consumers may oppose government interference (Golan et al., 2000). Other researchers, like Kolodinsky, highlighted the compromise and conflict that surrounded organic regulation from the farmer perspective:

> Organic farmers worried about losing control over the process fought large agribusiness lobbies that added "loophole" language, which initially allowed genetically modified (GM) and synthetic ingredients. Organic farmers are still fighting…Renewed interest in protecting the organic label indicates that there are factions that believe current legislation is not effective and that clearer, trustworthy, and enforceable labeling rules are necessary (Gaudiano 2010). (Kolodinsky, 2012, 202)

Today, the federally regulated USDA National Organic Program requires growers and businesses to follow certain practices to receive certification (USDA AMS-b). Organic and regenerative practices are similar, which has contributed to the diverging perspectives in discourse surrounding regenerative agriculture. Organic practices typically include crop rotation, biological control, cover crops, intercropping, conservation tillage, composts, animal manures, and rotational grazing (SARE Outreach, 2022). For the purpose of comparison, this review will reuse the Rehberger et al. practice-based definition. Regenerative practices may include "no or reduced till, cover cropping, crop rotation, reduced use or disuse of external inputs such as

agrichemicals, use of farm-derived organic inputs, increased use of perennials and agroforestry, integrated crop-livestock systems, and managed grazing" (Rehberger et al., 2023). Despite similar practices, consumer perspectives on the parallels of regenerative and organic are widely unexplored in literature surrounding regenerative agriculture.

While organic regulation provided some clarity for consumers through the introduction of the USDA Organic seal, a myriad of other food labels saturate the market. A 2017 Congressional Research Service (CRS) Report highlighted 24 voluntary food labels and arranged them into seven different categories: environmental sustainability, animal welfare, health/nutrition, human rights/ethics, religious, and local business promotion (CRS, 2017).

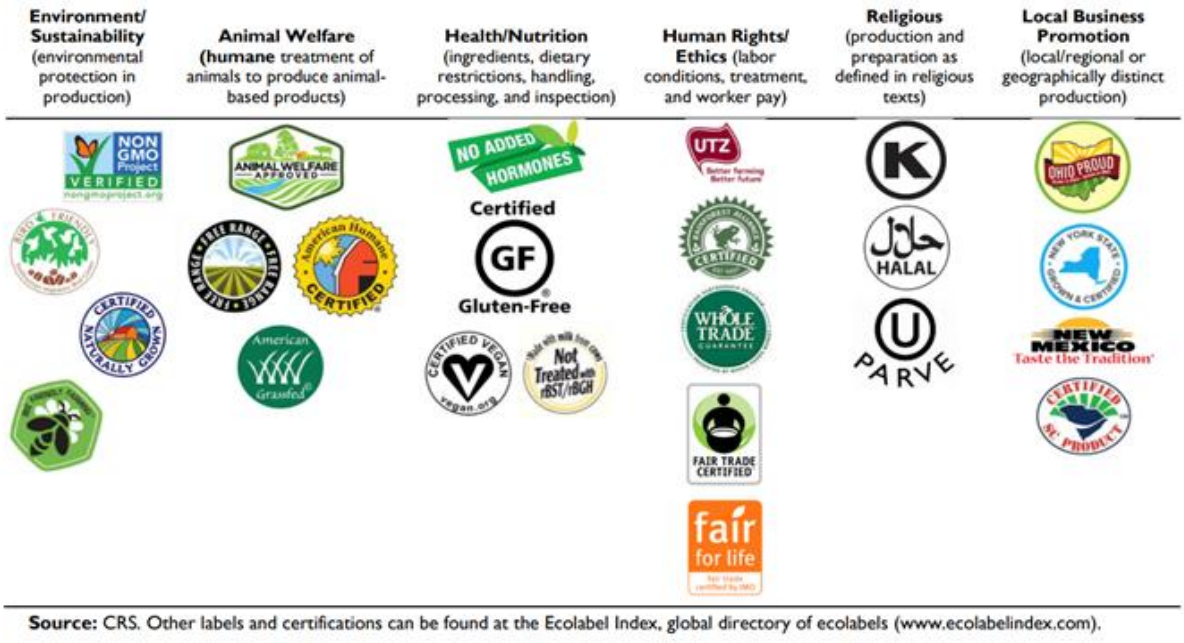


Figure 4: Selected voluntary food product label categories and selected examples (Congressional Research Service, 2017)

CRS selected just 24 of over 200 labels available on the Ecolabel Index (CRS, 2017). The EPA defines ecolabels as "marks placed on product packaging or in e-catalogs that can help consumers and institutional purchasers quickly and easily identify those products that meet specific environmental performance criteria and are therefore deemed 'environmentally preferable'" (EPA, 2014). As of July 2024, there are approximately 202 ecolabels in the U.S. listed on the Ecolabel Index (Ecolabel Index). There are currently no "official" regenerative food labels in the United States, or global Ecolabel Index (Ecolabel Index).

Single Practice	Set of Practices
• Antibiotic Free • Cage-free Eggs • "Contains" / "Free of" Genetically Engineered (Modified) ingredient • Dolphin-safe Tuna • Extra Virgin (olive oil) • Grass-fed cattle • Pasture-raised Eggs • Radura (irradiated) • rbST-free Milk • Shade-grown Coffee • Vine-ripened Tomatoes	• American Humane Certified • Animal Welfare Approved • Biodynamic (wine) • Bird Friendly • Certified Humane • Fair Trade • Free Range • HACCP certified • Halal • Certified Humane • Kosher • Natural • Organic • Rainforest Alliance Certified • Salmon Safe • Sustainably Produced • UTZ certified

Figure 5: Examples of Process Labeling in Food (Messer, et al., 2017)

In *Labeling Food Processes: The Good, the Bad and the Ugly,* Messer et al. provide a table of prominent practices associated with process food labels. They describe the increase in asymmetric information as twofold: advancement in agriculture and increasing disconnect between consumers and food (Messer et al., 2017). They then suggest:

> During this same time period, however, a number of new health and environmental concerns have risen in the public discourse that are related to the food system. These health trends and claims, however, whether accurate or not, can sow seeds of doubt in consumers' perceptions regarding the food they are eating, especially when they feel like they have lost control over the choices offered by the food system. (Messer et al., 2017, 409)

After exploring the good, bad, and ugly of food labeling, Messer et al. conclude this paper with the assertion:

> In a way, the entire organic and alternative food movement can be interpreted as a signal to the food industry that cheap and plentiful food should not come at the cost of wholesomeness, the environment, and eating quality. Science-based technological progress in agriculture, however, does not necessarily need to focus on productivity gains, and it can be redirected toward other objectives valued by consumers. (Messer et al., 2017, 409)

A 2023 study by Li and Lin aimed to gauge the impact of altruism on consumer preferences when shopping for sustainable foods. To measure altruism, Li and Lin utilized Lusk et al.'s psychometric scale, which asks participants to respond to five questions on a scale of 1 (strongly disagree) to 7 (strongly agree) (Li & Lin, 2023).

Item	Description
1	I am willing to make sacrifices for the good of those around me
2	I enjoy contributing to charities and other non-profit organizations
3	Pay taxes is important because they fund programs such as schools and roads from which everyone benefits
4	I am comfortable receiving benefits even if I don't contribute
5	My personal happiness is more important than the well-being of the average American

The order of the questions was randomized.

Figure 6: Scale on altruism orientation (Li & Lin, 2023).

Participants were then given a choice between an unlabeled 12 oz. bag of coffee, a branded 12 oz. bag of coffee, or a branded 12 oz. bag of coffee which had a USDA Organic seal, Fair Trade label, and Carbon Trust label on the packaging (Li & Lin, 2023). Among the participants, the USDA Organic label was the most preferred, followed by the Carbon Trust label and the Fair Trade label (Li & Lin, 2023). However, many participants had a negative response to these labels. Li and Lin found that: "Approximately 34%, 39%, and 35% of respondents express a dislike for the USDA organic, Fair Trade, and Carbon Trust claims, respectively" (Li & Lin, 2023, 7). Li and Lin found that participants were willing to pay $1.20 more for USDA organic coffee, 75 cents more for Carbon Trust coffee, and 73 cents more for Fair Trade coffee (Li & Lin, 2023). Participants with higher altruism scores were more likely to purchase coffee with one or more of the sustainable food labels. Participants with higher altruism scores were also willing to pay more for sustainable food products than participants with a lower altruism score (Li & Lin, 2023). The Li and Lin study found that consumers with higher rates of altruism are willing to pay for products with sustainable food labels.

The Uncertain Future of Regenerative Agriculture

Unlike organic, there are no federally enforced practices for regenerative agriculture which must be met before a farmer or producer can receive a certification, label, or seal (Khangura et al., 2023). In fact, there are numerous certifications and labels in the market that make regenerative claims (Reguzzoni, 2018). This leads to asymmetrical labeling and consumer confusion. This can also create a lack of familiarity with product labels when familiarity typically influences value-driven consumers (SPINS, 2023).

There are numerous regenerative certifications and labels. Kiss the Ground features 10 different regenerative certifications on their website: Demeter USA, Fibershed, A Greener World's Certified Regenerative, Real Organic Project, RegenScore, ROC, Regenified, Land to Market, Green America, and Soil Regen (Kiss the Ground-b). A

2024 Climate Collaborative report entitled *Regenerative Agriculture Certscape* highlights the following regenerative certifications: A Greener World, Land to Market, Regenerative Organic Alliance, Regenified, and Soil Carbon Initiative (Climate Collaborative, 2024).

In a 2024 white paper, the Nutrient Density Alliance discusses the intersections of regenerative agriculture, nutrition, and consumer perspectives. The Nutrient Density Alliance asserts that brands that make regenerative claims should do more to engage health-driven consumers (Nutrient Density Alliance, 2024). Respective to their white paper, the Nutrient Density Alliance writes: “Regenerative Agriculture is defined broadly as a program with 3rd party validation around soil-centric and agroecological principles, with acknowledgment that Indigenous Practices are being resurfaced in commodity agriculture via Regenerative Agriculture” (Nutrient Density Alliance, 2024, 14). Later, the Nutrient Density Alliance describes the importance of third-party verification in any regenerative agriculture messaging and places regenerative certifications into three categories: animal+ focused, ag system agnostic, and foundationally organic (Nutrient Density Alliance, 2024). The Nutrient Density Alliance does not provide descriptions for these, nor do they describe their rationale for placing certification in each category.

Figure 7: Visualization of third-party verification seals (Nutrient Density Alliance, 2024)

Organic Voices, a Regenerative Organic Certified Alliance member organization, wrote a white paper in 2024 criticizing the following regenerative certifications: Certified Regenified, Regenerative Verified, and Regeneratively Grown (Organic Voices, 2024). Regenified has a regenerative certification process for farms and ranches, brands, and

supply partners (Regenified). Regenerative Verified and Regeneratively Grown offer a regenerative certification process for producers and companies (Soil Regen). The Organic Voices paper criticizes Regenified for failing to prohibit pollutants and for a lack of targeted, measured outcomes for environmental impact. It also notes that Regenified operates without third-party certification, without supply chain integrity standards, and is a for-profit company, which Organic Voices claims is a conflict of interest (Organic Voices, 2024).

This paper also condemns Regenerative Verified and Regeneratively Grown for requiring only one regenerative practice, limited documentation, and allowing chemical inputs. Additionally, Organic Voices claims that Regenerative Verified and Regeneratively Grown do not address water quality, biodiversity, and farmworkers rights in their certification requirements. Organic Voices claims that, similar to Regenified, Regenerative Verified and Regeneratively Grown have multiple conflicts of interest arise throughout their certification process, particularly as for-profit entities. Despite these criticisms, there is no legal definition, or certification standards for regenerative agriculture that bar these criticized approaches.

Organic Voices has a vested interest in the alignment of regenerative and organic and regenerative organic certification (ROC). The Nutrient Density Alliance found that “Regenerative Organic Certified products enjoy a 35% price premium over organic products” (Nutrient Density Alliance, 2024, 16). Many members of the Regenerative Organic Alliance benefit from these premiums through sales of their regenerative organic certified products which could also become a conflict of interest.

According to some experts, tilling can be a source of tension between those who practice regenerative organic agriculture and those who practice conventional regenerative agriculture (Barclay, 2023; Organic Voices 2024). Experts like Brown and Barclay would assert no-till practices are an important component of regenerative agriculture as they sequester carbon, reduce erosion, improve drainage and support soil health (Brown, 2021; Barclay, 2023). Many environmental organizations would disqualify reduced-tilling from being considered a regenerative practice as tilling is considered a major soil disturbance (Kiss the Ground- a, Regenerative Farmers of America). Organic Voices discusses the topic of tillage extensively throughout their 2024 white paper, asserting tillage is not a monolith. Organic Voices suggest that tillage does not always have a negative impact on soil health, particularly when land is managed through different organic practices. Organic Voices then asserts:

> This has been shown in numerous long-term farming trials at land-grant universities and non-profit research institutions across the United States, which

> have found positive impacts on soil quality in organic farming systems with tillage compared to conventional systems, including no-till (Organic Voices, 2024, 5).

While both organic and regenerative agriculture encourage the use of cover crops, some farmers who have converted to regenerative agriculture still rely on herbicides to sustain no-till practices (Brown, 2021), which becomes another point of contention in the broader regenerative movement as seen throughout the Organic Voices white paper. Groups like the Real Organic Project assert: "'Regenerative Agriculture' is easily co-opted and used as a form of greenwash and duplicity. Regenerative Organic agriculture does not employ fossil fuel-based synthetic fertilizer, toxic pesticides or GMOs, and agricultural practices cannot be labeled as Regenerative if they are harming people and polluting our planet" (Real Organic Project, 2020). The conventional regenerative practices and regenerative organic practices are a politically charged topic of discourse surrounding regenerative agriculture. This contention also supports assertions made by experts, like Kolodinsky, that concerns surrounding organic standards persist today.

SPINS is an organization dedicated to transparency in translating point-of-sales data, product intelligence, and consumer panel data into common language for retailers, brands, and partners and the everyday values-oriented consumer. SPINS has recognized the increase in regenerative products and has begun to release data highlighting this growth. Last year, SPINS released a blog post highlighting ROC's rigorous certification standards. In 2023, ROC saw an 11.7% increase in sales (SPINS Marketing, 2023). However, ROC products must be USDA Organic certified, which makes it challenging to gauge whether a consumer is purchasing a product for the ROC certification or the familiar USDA Organic certification (Regenerative Organic Certified Alliance, 2020, 6). Despite this growth, some have critiqued ROC's standards for being too rigorous as they exclude farmers and producers who are growing regeneratively while still relying on chemical inputs (Wozniacka, 2018b). Others claim that the ROC label adds more consumer confusion amidst the abundance of labels (Reguzzoni, 2018). Some groups even suggest ROC is undermining USDA Organic standards (Organic Produce Network, 2017; Reguzzoni, 2018; Hughes, 2021) by claiming to go beyond organic. These criticisms have not stopped proponents of ROC, like the Rodale Institute, from encouraging consumers to buy regenerative to curb climate change (The Rodale Institute, 2020). ROC may provide a clear path forward for the future of regenerative agriculture, but its purist approach may also be too limiting in its efforts to rapidly transform the food system.

While large corporations have influenced many of the regenerative certifications referenced above, there are a number of smaller brands creating their own regenerative labels. Brands like the Painterland Sisters, who use a regeneratively farmed seal on their yogurt containers (Painterland Sisters) and proudly claim: "We're 100% committed

to organic regenerative farming practices that are good for you and the planet" (Painterland Sisters). There are also brands like Alexandre Farms who have received Land to Market Verification but still use their original EcoDairy Seal stating:

> Years ago, before we applied for 3rd-party organic and regenerative certifications, as a family we made a commitment to a way of life for our farm that we honor with our own EcoDairy seal. You will see this seal on the packages of other brands that are committed to nutrient-dense foods and a healthy Earth and use our goods as ingredients in our products. (Alexandre Family Farm)

Macadamia Milk's regenerative label reads "It's R Choice Regenerative Farming" (Mikadamia, 2019). Even retailers like online marketplace Thrive Market are creating custom, store brand regenerative products (Thrive Market). While these claims are powerful, asymmetric labeling could overwhelm consumers and actually dissuade them from purchasing regenerative products.

Regenerative certifications and labels continue to proliferate, as seen during the early days of organic before the USDA stepped in. While regenerative food labels are certainly on the rise, some farmers have expressed a hesitancy to undergo another certification process unless consumers are explicitly requesting it (Reguzzoni, 2018). Will the USDA intervene and create a standardized regenerative certification as they did with organic? The future of regenerative certification remains uncertain, but research on consumer perspectives may offer clarity to the politically charged debate on the definition and labeling of regenerative.

Key Findings on Consumer Perceptions of Regenerative Agriculture

A 2021 study found that only 19% of participants were familiar with regenerative agriculture (International Food Information Council, 2022). After assessing a baseline of familiarity, participants were presented with the following statement: "'regenerative agriculture practices' refers to farming that aims to restore and maintain optimal levels of nutrients and microorganisms in the soil" (International Food Information Council, 2022, 4). After this statement was shared, researchers found that 1 in 4 participants considered regenerative practices an important factor in their purchasing of food/beverage items (International Food Information Council, 2022). Later in the study, participants were given a scenario where they would have to pay an additional dollar for a regeneratively grown product and only 12% of participants were highly likely to spend more (International Food Information Council, 2022). 45% of respondents indicated an interest in purchasing food and beverages made without the use of pesticides (International Food Information Council, 2022). This data point may be noteworthy for

purist organizations, like ROC and the Real Organic Project, who condemn pesticide use in regenerative practices (Wozniacka, 2019a).

A 2022 study titled “Consumer preferences when purchasing meat in the United States” found that 26% of respondents preferred regenerative agriculture practices when purchasing meat in the U.S. while 24% of respondents preferred lower/no carbon footprint when purchasing meat in the U.S. (Shahbandeh, 2023). 44% of consumers preferred purchasing beef raised in the U.S., which was the data’s max. 19% of respondents identified a preference in purchasing organically raised meat (Shahbandeh, 2023).

A 2023 SPINS report found that consumers are increasingly interested in clean labels for meat and dairy products (SPINS, 2023) which could give brands with animal-welfare focused regenerative certifications a competitive edge in the market (Nutrient Density Alliance, 2024). Regenerative organic milk experienced a 93% change in year over year sales and regenerative eggs experienced a 53% change in year over year sales (SPINS, 2023). In 2023, ROC sales totaled almost $40 million (Regenerative Organic Certified Alliance, 2024); beans, grains, rice, oils and vinegars are the largest categories (SPINS Marketing, 2023). SPINS also uses the term “regenerative organic” for products without ROC labels, as some products with other regenerative labels are also USDA Organic, which again, leads to consumer confusion. As the discourse surrounding regenerative agriculture continues to evolve, researchers must seek out consumer perspectives in addition to tracking consumer trends.

Conclusion

This literature review uncovered that regenerative agriculture is not only an incredibly complex topic, it is constantly evolving. One thing scholars, policy makers, farmers, and producers seem to agree on is that regenerative agriculture has grown from a moment to a movement. However, there are many emerging topics within the study of regenerative agriculture that need further research to better understand the transformative potential of this movement.

While the big tent and purist debate has contributed to the politically charged discourse that surrounds regenerative agriculture there is almost no peer-reviewed literature that explores this topic. More research on big tent and purist positions, and where consumer perspectives land, could play a crucial role in the trajectory of this movement and the future of regenerative agriculture.

Groups like the Nutrient Density Alliance have begun to explore the connection between nutrient density and regenerative agriculture as seen in their 2024 white paper (Nutrient Density Alliance, 2024), while brands like the Painterland Sisters and Alexandre Family Farms both make the claim that their regenerative products are nutrient dense (Painterland Sisters; Alexandre Family Farms). The Nutrient Density Alliance positions nutrition as a point of entry for brands but makes this recommendation with limited information on consumer perspective. The future of planetary and human health may play a critical role in driving consumer demand for regenerative (Li & Lin, 2023; Rodale Institute, 2024; Nutrient Density Alliance; 2024), but this research remains limited.

Another gap in the study of regenerative agriculture is research that provides clear, consistent and confident data regarding regenerative agriculture's ability to curb climate change. Some groups suggest that extensive research is not necessary to begin adopting regenerative practices (Nutrient Density Alliance, 2024), but others caution that regenerative agriculture still lacks substantial scientific studies to support claims like improving soil health or carbon sequestration (Jordon et al., 2022). Leveraging regenerative agriculture as the end-all-be-all solution to climate change without sound science could be considered irresponsible, if not dangerous. Research that addresses this gap may also provide greater clarity on the effectiveness of certain principles, practices, or outcomes associated with regenerative agriculture and set a clearer path towards regenerative than what exists today.

Despite wide ranging efforts, regenerative agriculture still has no legal definitions, no standardized practices, principles, and outcomes. This ambiguity has resulted in an influx of asymmetrical labels, which make a range of regenerative claims. Label or no label, there are very few consumer surveys, studies, or interviews on the topic of regenerative agriculture. This paper aims to address some of the gaps in consumer perceptions through a survey that 1) assesses consumer awareness and understanding of regenerative agriculture 2) identifies the key factors that drive consumer purchases of regenerative products 3) evaluates the willingness of consumers to pay a premium for products labeled as regenerative 4) analyzes demographic influences on purchasing behaviors and attitudes towards these products 5) compares these trends to organic.

Results

Survey Respondent Characteristics

The research team conducted market research surveys with two different groups: general population consumers and Sprouts Farmers Market (Sprouts) consumers. There were 312 responses from general population consumers and 90 responses from Sprouts customers. The research team was not examining the data for statistical significance, so cardinal comparisons cannot be made between the general population and Sprouts sample. Rather, the research team was interested in ordinal comparisons given that the general population sample was a group of professional survey takers while the Sprouts sample was a self-selected set of natural foods consumers.

Of the general population consumers, 51% identified as female, 46% identified as male, 2% identified as non-binary/third gender, and 1% preferred not to self-identify. A broad range of ages participated from those under 20 to those in their 70s. 30.0% of the general population consumers shop at big box stores, primarily Walmart. The income of general population respondents ranged from less than $20,000 to more than $200,000 annually. The mode income of the general population sample was $20,001 to $40,000, annually.

Of the Sprouts consumers, 82% (64) identified as female,17% (13) identified as male, and 1% (1) preferred not to self-identify. Respondent ages ranged from 20 to those in their 80s, with 84% being 40 or older. The income of respondents ranged from less than $20,000 to more than $200,000. The mode income of the Sprouts sample was more than $200,000 annually, although that far exceeds the median income gathered in previous Sprouts-run surveys.

Consumer Preferences

To better understand consumer motivations, the research team asked consumers to rank the top five values that drive their purchase from the following options: “Health for myself and/or family,” “Flavor,” “Organic or Natural Ingredients,” “Price,” “Environmental responsibility,” “Convenience,” “Locally grown/produced,” “Local business,” “On sale,” and “Other: fill in the blank.”

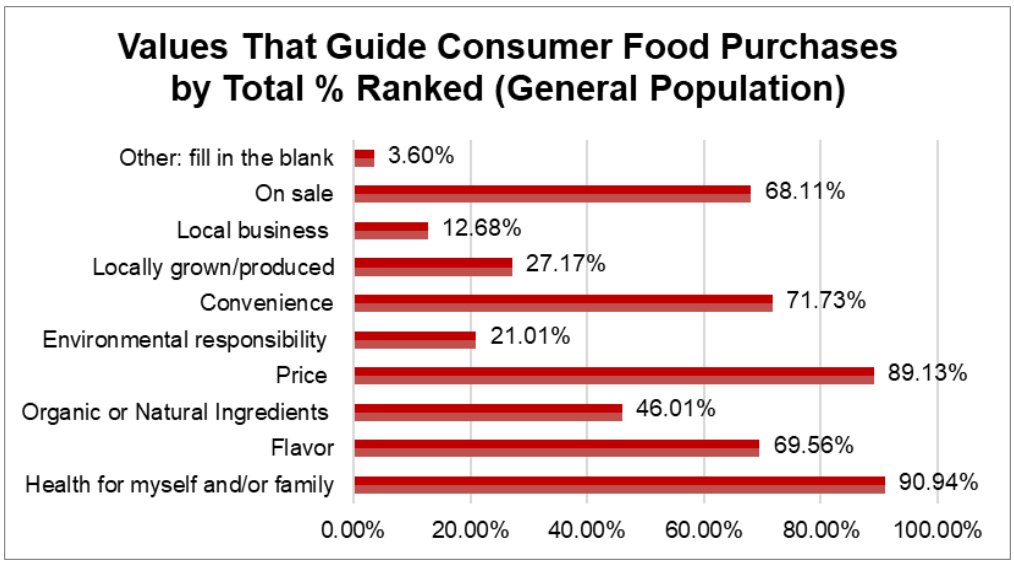


Figure 8: Rank the top 5 values that guide your food purchases (General Population)

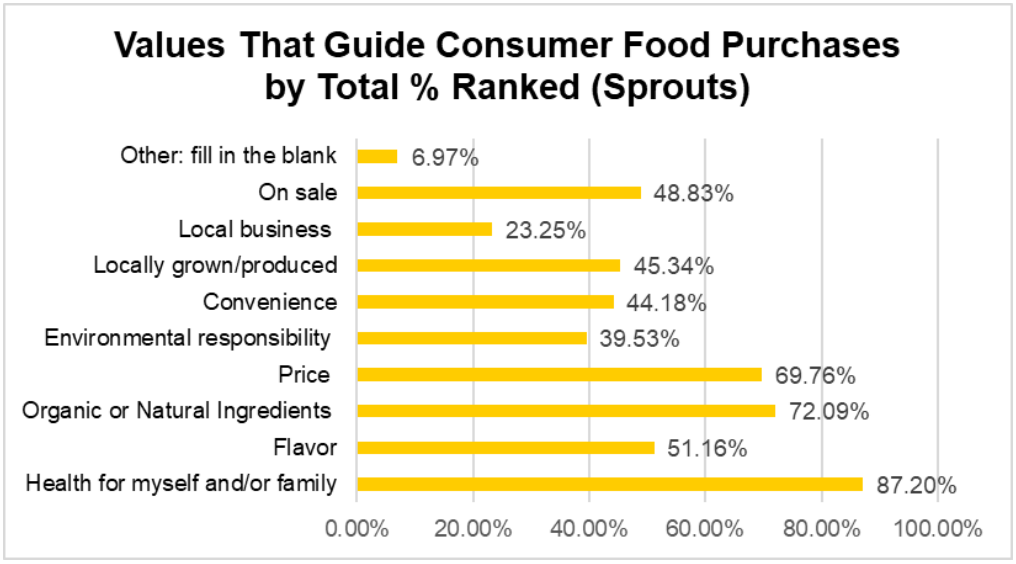


Figure 9: Rank the top 5 values that guide your food purchases (Sprouts)

Data indicates that health is a top priority for both the general population consumers and Sprouts customers. 90.94% of the general population consumers and 89.53% of Sprouts consumers rank “health for myself and my family” as a top five value which influences their food purchases.

Price appears to be another significant value guiding food purchases across both samples. 89.13% of the general population consumers ranked price among their top five values. 69.77% of Sprouts consumers ranked price among their top five values.

Environmental responsibility as well as local production received a notably lower response rate across general population consumers. Sprouts consumers rating "environmental responsibility" within their top 5 values at just 39.5% is perhaps surprising given that the sample is composed of natural foods consumers.

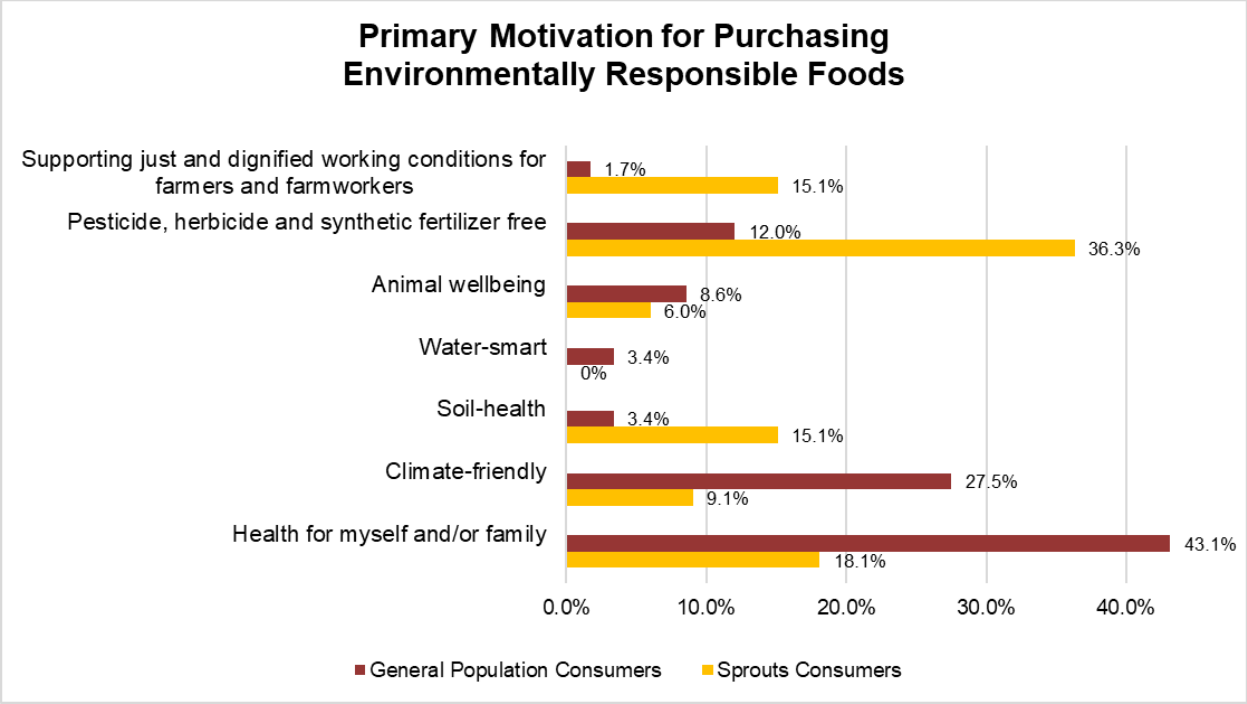


Figure 10: What is your primary motivation for buying foods that are environmentally responsible? (General Population and Sprouts)

Consumers who ranked "environmental responsibility" among their top 5 values were directed to a question which asked "What is your primary motivation for buying foods that are environmentally responsible?" General population consumers indicated "health for myself and/or family" as the primary motivation for purchasing environmentally responsible foods. This focus on health aligns with the 90.94% of general population consumers who ranked "health for myself and/or family" within the top five values which guide their food purchases. It is also worth noting that 27.5% of general population respondents indicated "climate-friendly" as many producers, stores, and brands have begun to market regenerative agriculture as a solution to address climate change.

In contrast, 43.1% of Sprouts consumers ranked "pesticide, herbicide, and synthetic fertilizer free" as their primary motivation. This finding aligns with Sprouts' values as a natural foods retailer. Sprouts consumers were also motivated by "health for myself and/or family," "soil health," and "supporting just and dignified working conditions for farmers and farmworkers" at 18.1%, 15.1%, and 15.1%, respectively. Sprouts should

consider the primary motivation of Sprouts consumers in their regenerative product marketing strategy.

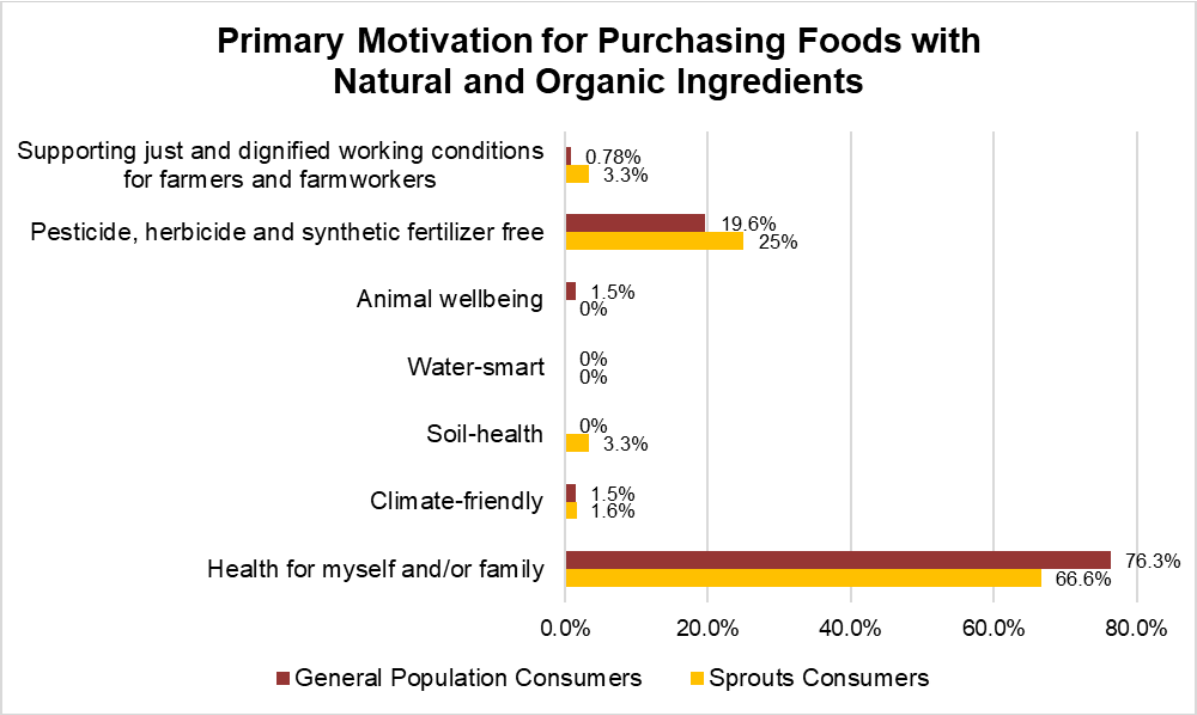


Figure 11: What is your primary motivation for buying foods that have organic or natural ingredients? (General Population and Sprouts)

Consumers who ranked “organic or natural ingredients” among their top 5 values were directed to a question which asked “What is your primary motivation for buying foods that have organic or natural ingredients?” General population consumers and Sprouts consumers appear to be overwhelmingly motivated by purchasing foods with organic or natural ingredients for health purposes. 76.3% of general population consumers and 66.6% of Sprouts consumers indicated “health for myself and/or family” as their primary motivation. 19.6% of general population consumers and 25% of Sprouts consumers indicated “pesticide, herbicide and synthetic fertilizer free” as their primary motivation for buying foods with organic or natural ingredients.

While both samples appear to consider “climate-friendly” a motivating factor in the purchase of environmentally responsible products, just 1.5% percent of general population consumers and 1.6% of Sprouts consumers were influenced by climate-friendly values in their purchasing of foods that contain organic or natural ingredients.

Consumer Perspective on Labeling

These consumers were then asked “Considering the foods you purchase that promote their healthfulness or environmental responsibility, which statement best describes your attitude?” and responses varied across each sample.

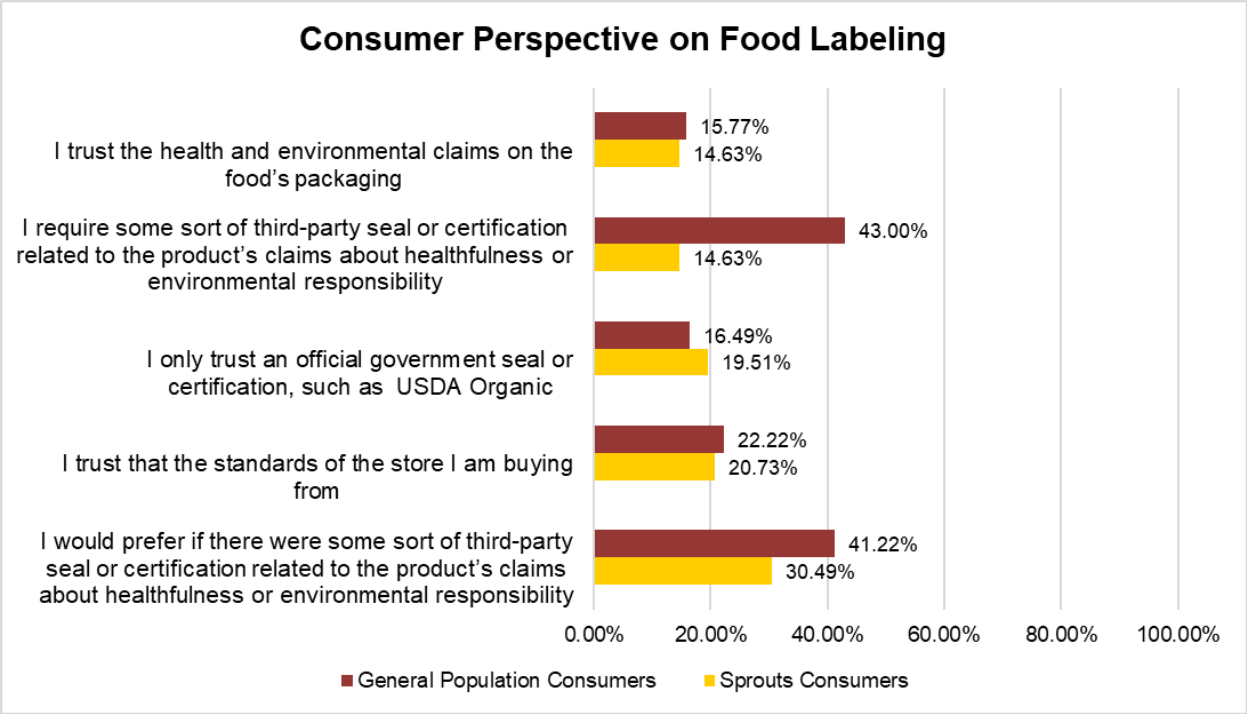


Figure 12: Considering the foods you purchase that promote their healthfulness or environmental responsibility, which statement best describes your attitude?

A total of 43% of general population consumers responded “I require some sort of third-party seal or certification related to the products claims about healthfulness or environmental responsibility” and and 41.22% responded “I would prefer if there were some sort of third-party seal or certification related to the product’s claims about healthfulness or environmental responsibility.” When analyzing the Sprouts sample, it is worth noting that only 20.73% of Sprouts consumers indicated “I trust that the standards of the store I am buying from” as this sample was a self-selected set of natural foods consumers. 14.63% responded “I require some sort of third-party seal or certification related to the products claims about healthfulness or environmental responsibility.” Nearly a third (30.49%) of Sprouts consumers indicated “I would prefer if there were some sort of third-party seal or certification related to the product’s claims about healthfulness or environmental responsibility.”

When designing the survey, our research team was intentional in asking consumers for their perspectives on preferring and requiring third-party seal, or certification, as these

choices could be considered mutually exclusive. Consumers who indicated either a requirement of/preference for third-party certifications were then directed to a follow-up question to measure the weight of third-party seals or certifications on purchasing habits.

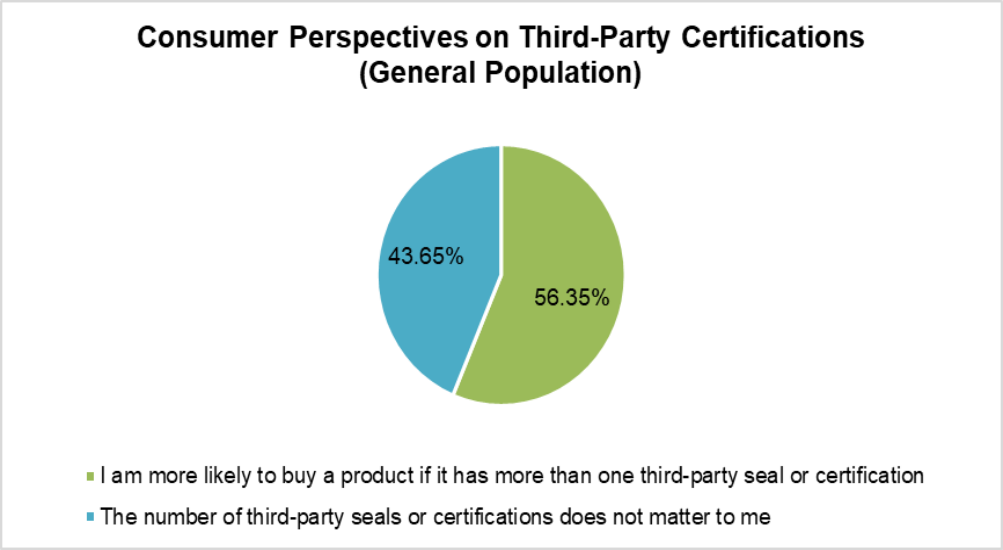


Figure 13: Which statement best describes your attitude? (General Population)

In all, 56.35% of general population consumers responded that “I am more likely to buy a product if it has more than one third-party seal or certification” while 43.65% responded “The number of third-party seals or certifications does not matter to me.”

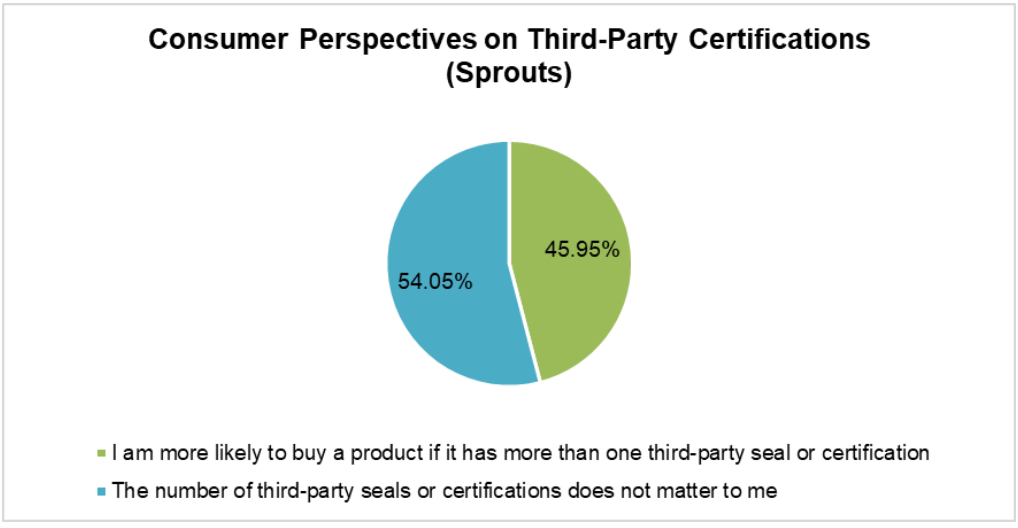


Figure 14: Which statement best describes your attitude? (Sprouts)

As seen in Figure 14, these numbers were basically inverted among Sprouts respondents.

While our study does not have the statistical significance required to warrant cardinal comparisons, it appears that third-party certifications may be more of a motivating factor for general population consumers. Considering that Sprouts is a natural foods market, it is interesting that the sample appears to give less weight to products with third-party certifications in their purchasing - recall that only 14.63% of Sprouts consumers indicated “I require some sort of third-party seal or certification related to the the products claims about healthfulness or environmental responsibility” as seen in Figure 12.

Because our sample pool does not have statistical significance, researchers interested in the topic of regenerative agriculture should prioritize a study with a larger sample size to better gauge consumer confidence in third-party seals or certifications as well as government seals and certifications.

Consumer Familiarity with Regenerative

As discussed throughout the literature review, regenerative agriculture is becoming a movement, yet many consumers remain unfamiliar with the term “regenerative.” To better understand consumer familiarity with regenerative, the research team asked each sample “How familiar are you with “regenerative” terminology that is now being used to describe some foods – such as “regenerative ag,” “grown regeneratively,” “Regenerative Organic Certified,” “made with regenerative ingredients,” etc.” to give food retailers, like Sprouts, better insight into consumer perspective and attitudes.

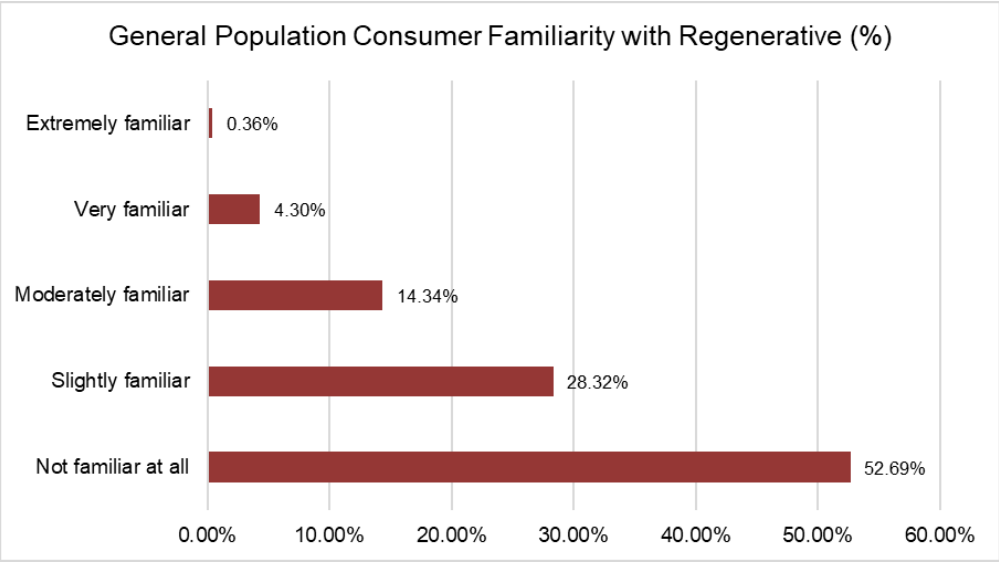


Figure 15: How familiar are you with “regenerative” terminology that is now being used to describe some foods – such as “regenerative ag,” “grown regeneratively,” “Regenerative Organic Certified,” “made with regenerative ingredients,” etc. (General Population)

When asked about familiarity with regenerative terminology used to describe food, over half (52.69%) of the general population consumers responded that they were “not familiar at all.” While 28.32% were “slightly familiar,” 14.34% were “moderately familiar,” “4.30%” were “very familiar” and 0.36% were “extremely familiar.” In other words, over 80% had no or very little familiarity with regenerative.

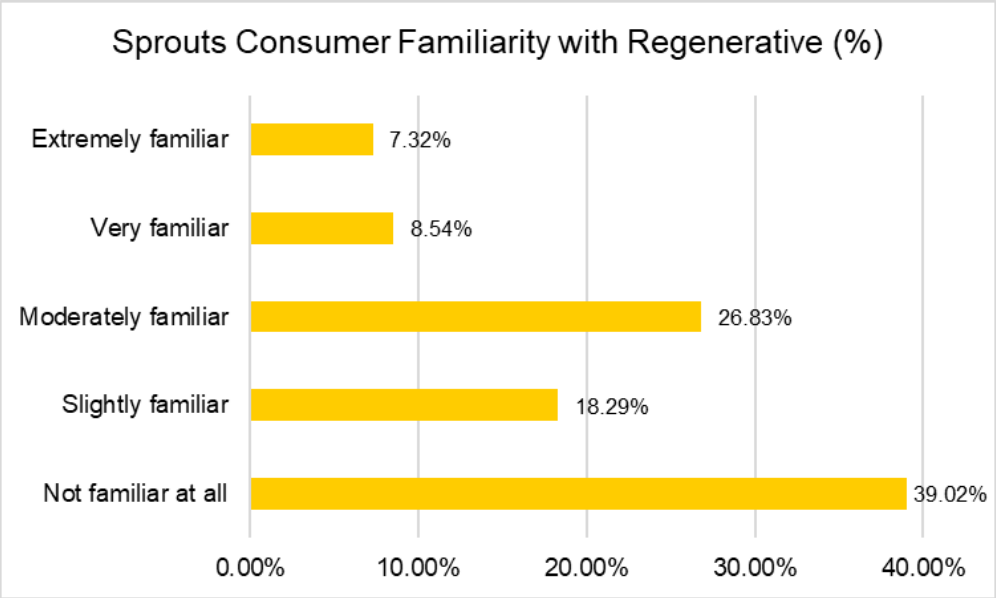


Figure 16: How familiar are you with “regenerative” terminology that is now being used to describe some foods – such as “regenerative ag,” “grown regeneratively,” “Regenerative Organic Certified,” “made with regenerative ingredients,” etc. (Sprouts)

That was less the case with Sprouts. Nearly 40% of Sprouts consumers were “not familiar at all” with regenerative terminology. While 18.29% were “slightly familiar,” 26.83% were “moderately familiar,” 8.54% were “very familiar,” and 7.32% were “extremely familiar.” Sprouts may be attracting customers with greater awareness of regenerative, or educating them, but it is clear that for sales of regenerative to grow consumer education will be essential as retailers introduce consumers to regenerative products.

Any consumer who indicated “slightly familiar,” “moderately familiar,” “very familiar,” and “extremely familiar” was then directed to a question which asked “In a phrase, series of phrases, or sentence, how would you define regenerative foods.”

About 48% of the general population consumers were at least slightly familiar with regenerative, and their responses ranged from uncertainty to common sharing of words or phrases like soil health, crop rotation, sustainability, nutrient density, and eco friendly. Multiple general population consumers highlighted the role of regenerative in fighting climate change. There were also general population consumers that described practices associated with regenerative agriculture with responses like “Foods that have been grown using practices that heal the earth and protect the soil's health using a combination of water conservation, animal husbandry, and natural ways of tending the crops,” or more colloquially, “I'd describe it as a modern version of what old-timey farmers knew and did such as crop rotation.”

Nearly 60% of the Sprouts consumers were directed to this question, and many respondents were able to provide words or phrases commonly used to describe regenerative like soil health, crop rotation, sustaining farmlands, no-till, nutrients, and “harmony with the natural environment.” Many Sprouts consumers amplified the environmental benefits of regenerative in their descriptions. One particular consumer responded “Healthy for you and the planet” which is similar to ““Better for you and the planet,” a regenerative claim introduced later in the survey.

As with any study, there were general population consumers that described regenerative as “fake.” There was also a Sprouts consumer that described regenerative as “nonsense.” However, a particularly interesting finding was that roughly 7.6% of general population consumers associated regenerative with labs, lab grown meat, GMOs, unnatural growing processes, or a combination of each. This finding highlights the need for continued consumer education. For a complete list of responses, visit Appendix F.

Survey respondents were then provided with one definition of regenerative agriculture from the organization Regeneration International: “A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density” and were asked to respond to its component phrases.

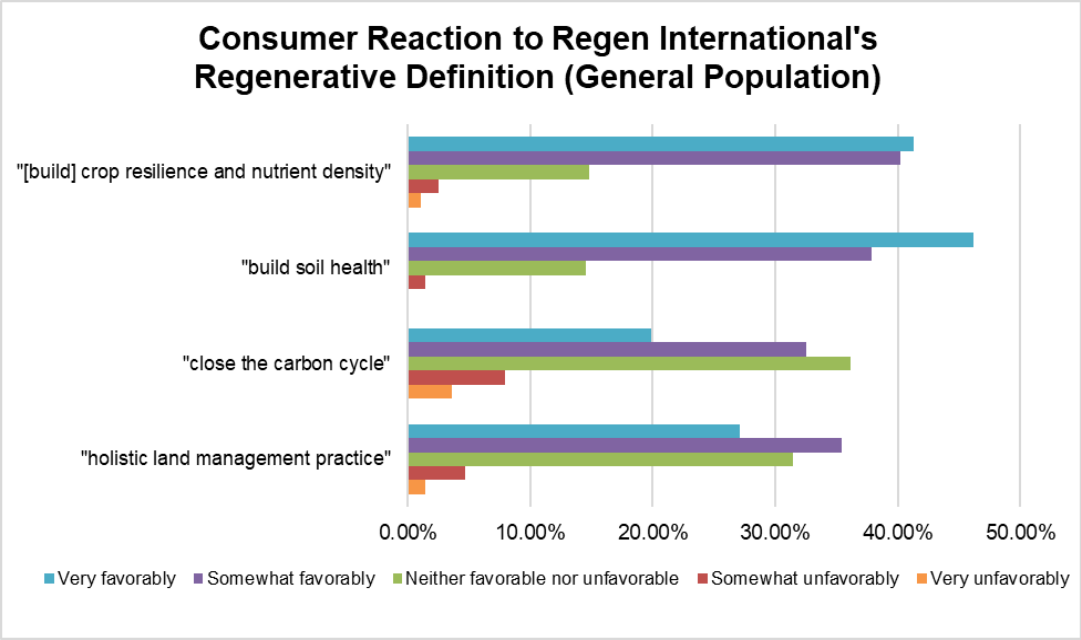


Figure 17: How do you react to various parts of: "A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density." (General Population)

It appears that general population consumers had no adverse reaction to any component of the definition as "somewhat unfavorably" and "very unfavorably" results remained below 10%. General consumers seemed to prefer the more specific portions of Regeneration International's definition of regenerative which focused on soil, crop resilience, and nutrient density. "[build] crop resilience and nutrient density" was the most well-received phrase: 40.22% of general population consumers responded "somewhat favorably" and 41.30% responded "very favorably." Additionally, 37.82% of general population respondents reacted "somewhat favorably" and 46% of respondents reacted "very favorably" in response to "build soil health." This phrase received no "very unfavorable" responses.

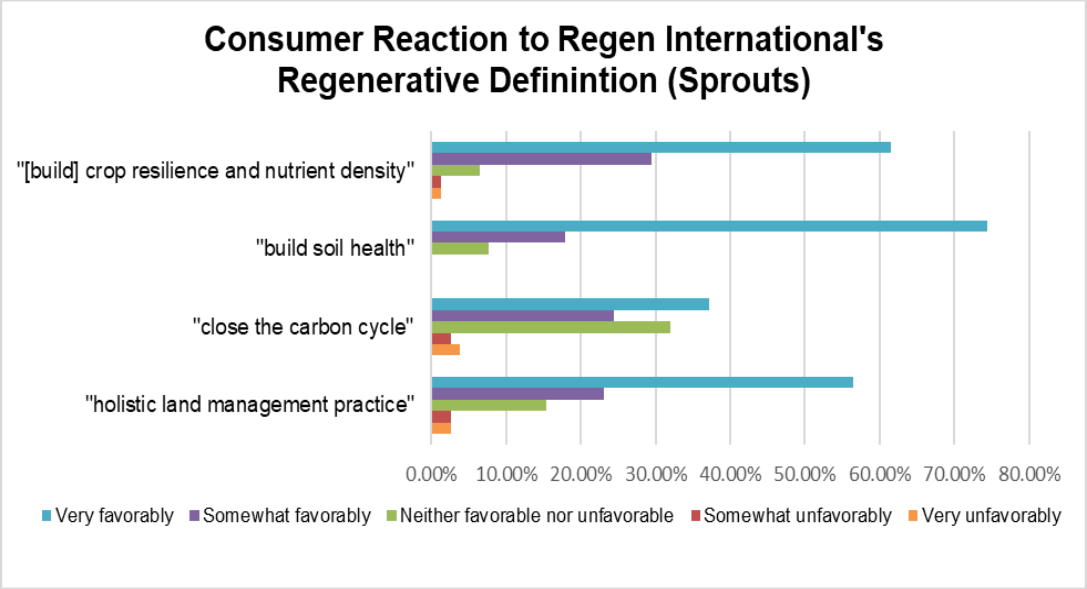


Figure 18: How do you react to various parts of: "A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density." (Sprouts)

Sprouts consumers had a minimal "very unfavorably" or "somewhat unfavorably" reaction to each part of the definition. Notably, "build soil health" received no "very unfavorably" or "somewhat unfavorably" responses, but 74.36% of Sprouts consumers reacted "very favorably" to it - the #1 response. A total of 61.54% of Sprouts consumers responded "very favorably" to "[build] crop resilience and nutrient density," 56.41% responded "very favorably" to "holistic land management practice," and 37.18% responded "very favorably" to "close the carbon cycle." Interestingly, "holistic land management practice" and "close the carbon cycle" which received lower "very favorably" reactions have the highest "neither favorable nor unfavorable" reaction with 32.05% and 15.38%, respectively.

Consumer Response to Regenerative

Upon providing both general population consumers and Sprouts consumers with a definition of regenerative, respondents were asked: "Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative?"

The "assuming" part of this question - a simplified attempt to isolate the impact of a single variable - is obviously a big ask for survey-takers, since it challenges them to express real interest in a hypothetical context. For greater accuracy, a survey should be

designed in which results can be analyzed through multivariate regression with an eye toward heteroscedasticity.

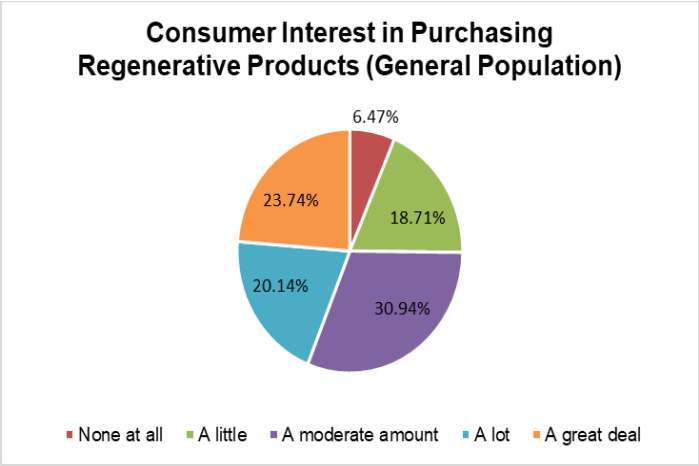


Figure 19: "Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative?" (General Population)

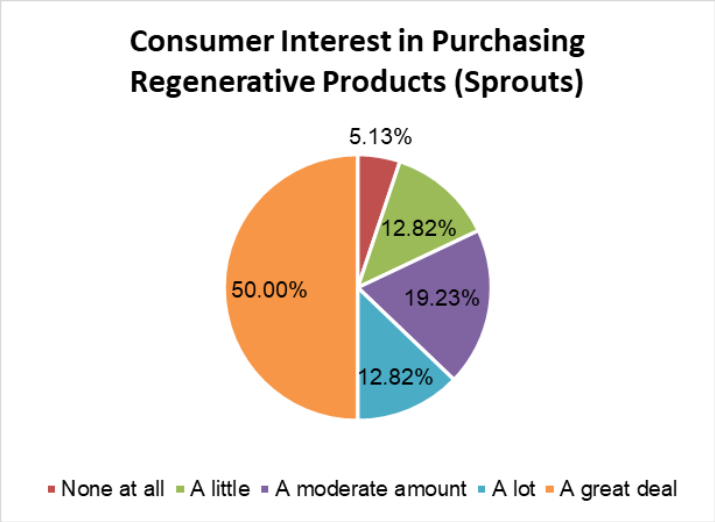


Figure 20: "Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative?" (Sprouts)

General population consumer interest in purchasing regenerative products ranged from 6.47% "not interested at all" to 23.74% of general consumers responding with "a great deal" of interest. Interest ranged from 5.13% of Sprouts consumers responding "none at all" to "50% of respondents indicating "a great deal of interest." Across both samples, less than 7% of respondents indicated "no interest at all" which is a noteworthy finding

for companies, brands, and food retailers interested in regenerative. However, these findings have not been tested for statistical significance and similar research with a larger sample must be conducted for interested stakeholders to better understand consumer interest in regenerative.

The research team also found it worthwhile to assess consumer interest in regenerative AND organic given the growing movement towards regenerative organic products that may be regenerative organic certified, or have the USDA Organic seal and a third-party regenerative label, or a seal like Regenified. Respondents from both samples were asked: “Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative AND organic?”

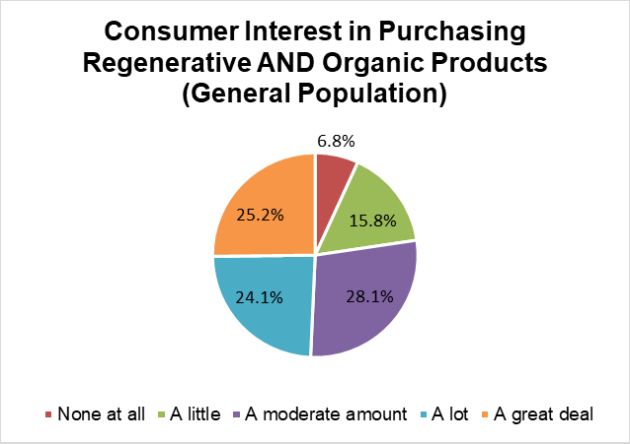


Figure 21: “Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative AND organic?” (General Population)

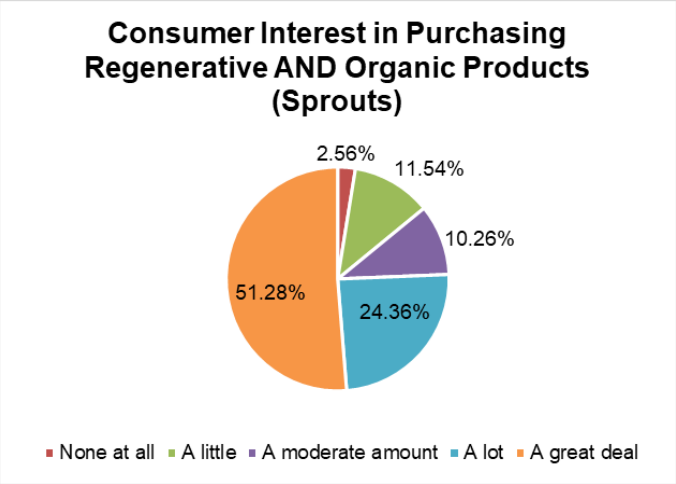


Figure 22: “Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative AND organic?” (Sprouts)

General population consumer responses ranged from 6.8% indicating “none at all” to 25.2% indicating “a great deal” of interest in purchasing regenerative AND organic products. Sprouts consumer responses ranged from 2.56% indicating “none at all” to 51.28% indicating “a great deal” of interest in purchasing regenerative AND organic products. The research team recognizes the potential for ambiguity in how respondents understand “regenerative AND organic,” but capital letters were used intentionally to imply that a product would be both regenerative and organic which is the framing used to assess the data. The addition of organic resulted in a minimal shift for general population consumers who indicated “none at all,” “a little” and “a great deal” of interest. Interest decreased for Sprouts consumers who indicated “a moderate amount” from 19.23% for “regenerative” products to 10.26% “regenerative AND organic” products. However, those who indicated “a lot” of interest increased from 12.82% “regenerative” products to 24.36% “regenerative AND organic” products.

While our research team is hesitant to make a direct comparison across research samples, future studies could conduct statistically significant research to assess how consumer shopping habits vary from general population consumers to those who shop at natural food retailers considering that Sprouts consumers exhibited a greater interest in purchasing “regenerative” and “regenerative AND organic” products.

Consumer Willingness to Pay for Regenerative and Organic

While understanding consumer interest in regenerative and organic is critical for retailers, interest does not always translate to willingness to pay (WTP). This prompted our research team to ask: “In which departments or categories do you think it would be fair to pay more for organic products? (check all that apply)” and “In which departments or categories do you think it would be fair to pay more for regenerative products? (check all that apply).”

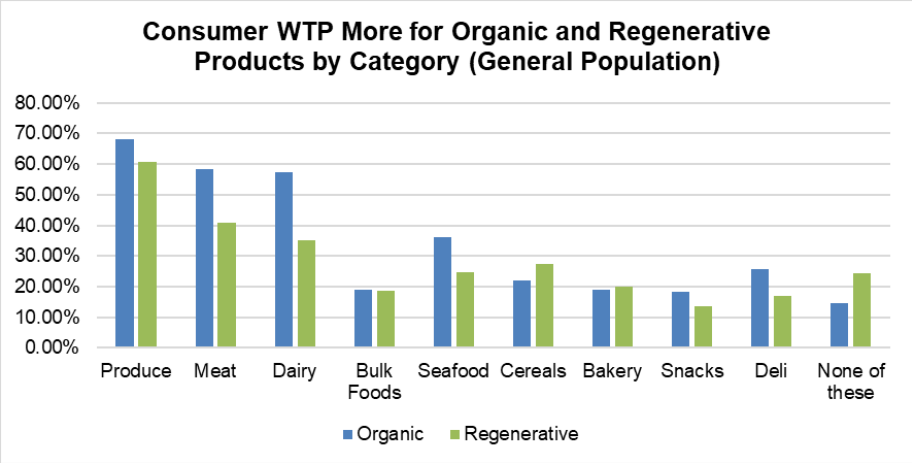


Figure 23: In which departments or categories do you think it would be fair to pay more for organic products? (check all that apply) and In which departments or categories do you think it would be fair to pay more for regenerative products? (check all that apply)" (General Population)

More than half of general population consumers expressed a greater WTP for organic Produce, Meat, and Dairy products (and more than a third also expressed that willingness for Seafood, although organic certification does not apply to fish).

The only regenerative category for which more than half of these consumers also expressed a greater WTP was Produce; Meat and Dairy were also reasonably high, both above 33%. The only categories in which general population consumers indicated a willingness to pay more for regenerative than for organic were Cereals and Bakery, which, interestingly given the low levels of awareness of regenerative, happen to be the grain-driven categories in which the most regenerative agriculture is currently taking place.

Other questions in this section of the survey not depicted here (see questions 17 and 19 in Appendix E) tried to gauge how much more the general population consumers were willing to pay for these products. The most common response for both organic and regenerative was 5%, although about one in four indicated they would be WTP "more than 10%" above what they currently pay for regenerative products - a much higher response than was received for organic products.

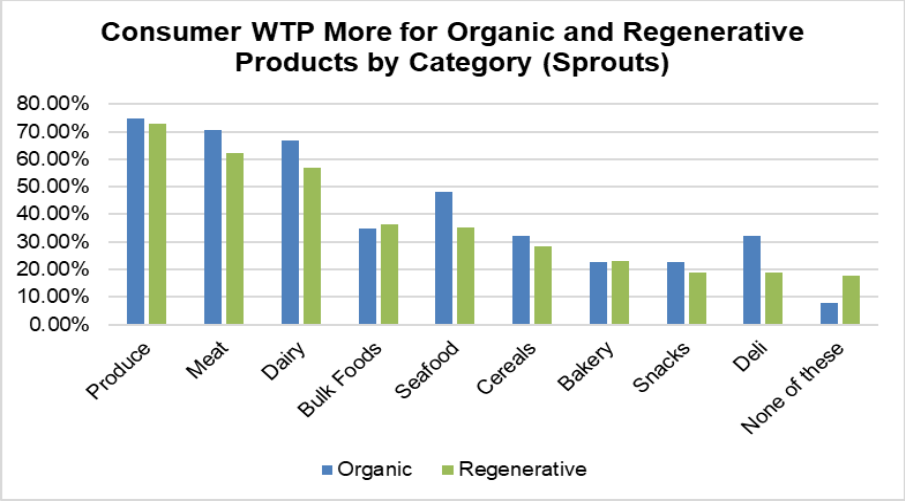


Figure 24: In which departments or categories do you think it would be fair to pay more for organic products? (check all that apply) and in which departments or categories do you think it would be fair to pay more for regenerative products? (check all that apply) (Sprouts)

The responses of Sprouts consumers to this same set of WTP questions were similar to those of general population consumers, but higher overall. Once again organic Produce, Meat and Dairy received the highest numbers, and Seafood was at almost 50%.

Here, more than 50% of consumers also expressed a WTP more for regenerative Produce, Meat and Dairy, and both Seafood and Bulk Foods were above 33%.

The answer “5% above what I currently pay for conventional products” remained the most popular response for both organic and regenerative products; interestingly, the “More than 10%” numbers were lower for Sprouts consumers than for the general population for both organic and regenerative.

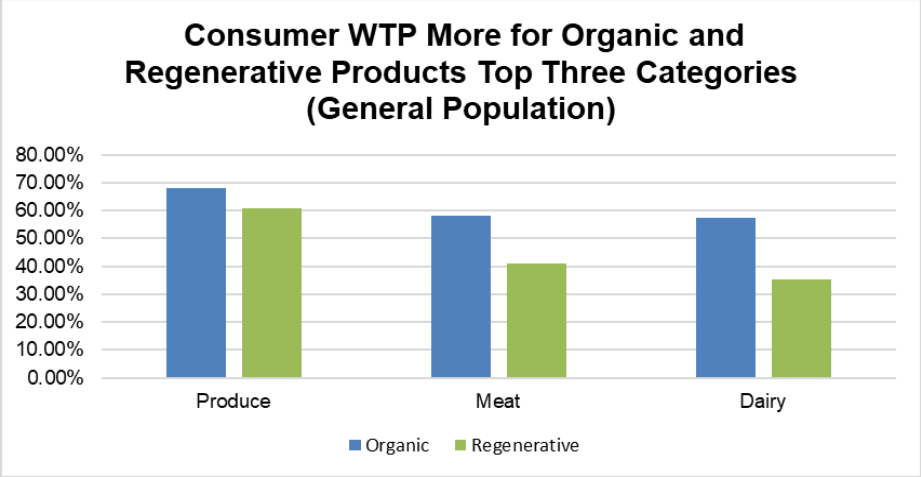


Figure 25: Top three categories were consumers WTP more (General Population)

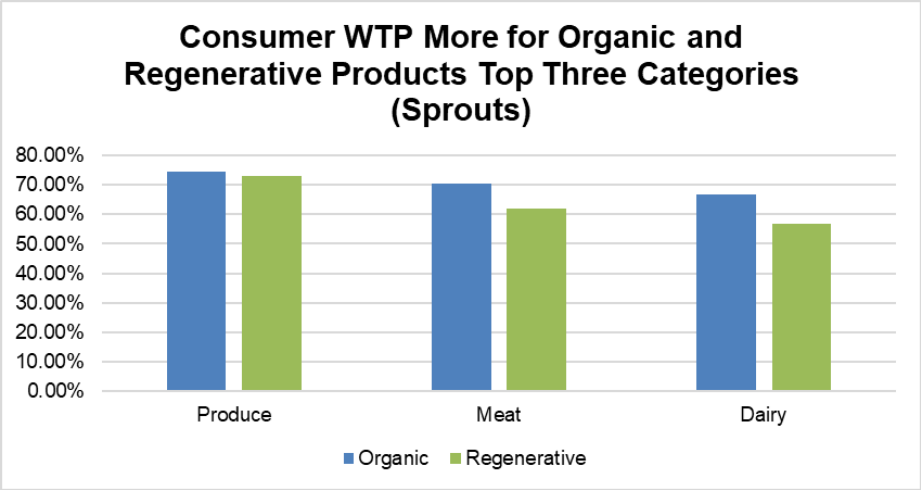


Figure 26: Top three categories were consumers WTP more (Sprouts)

Produce, Meat, and Dairy are the top three departments where both the general population and Sprouts consumers would be WTP more organic and regenerative products.

Regenerative and Organic Products Purchase History

While the research team assessed interest in and willingness to pay more for regenerative and organic products, understanding the frequency in which consumers across both samples already purchase regenerative and organic products is critical in this study. This prompted the following question: “In the last year, how often have you purchased the following kinds of products?”

When general population consumers were asked about regenerative products, more than three out of four said they were effectively non-purchasers (48.7% “never,” 27.59% “rarely”), while less than 8% were what might be thought of as power purchasers (6.45% “frequently” and 1.43% “regularly”). In the Sprouts sample, it was slightly more than half non-purchasers (25.92% “never,” 29.62% “rarely”) and one quarter power purchasers (19.7% “frequently” and 4.93% “regularly”).

Both groups were much more frequent purchasers of organic products, with a combined 39.06% “frequently” and “regularly” for the general population, and 76.53% “frequently” and “regularly” for Sprouts customers.

A visualization of this data can be found in Appendix E.

The Impact of Familiarity on Purchasing Regenerative

In evaluating the data presented above, it is critical to consider the lack of familiarity with regenerative across both samples, which prompted the research team to cross reference the purchasing of regenerative and organic products with familiarity of the term across both sample groups.

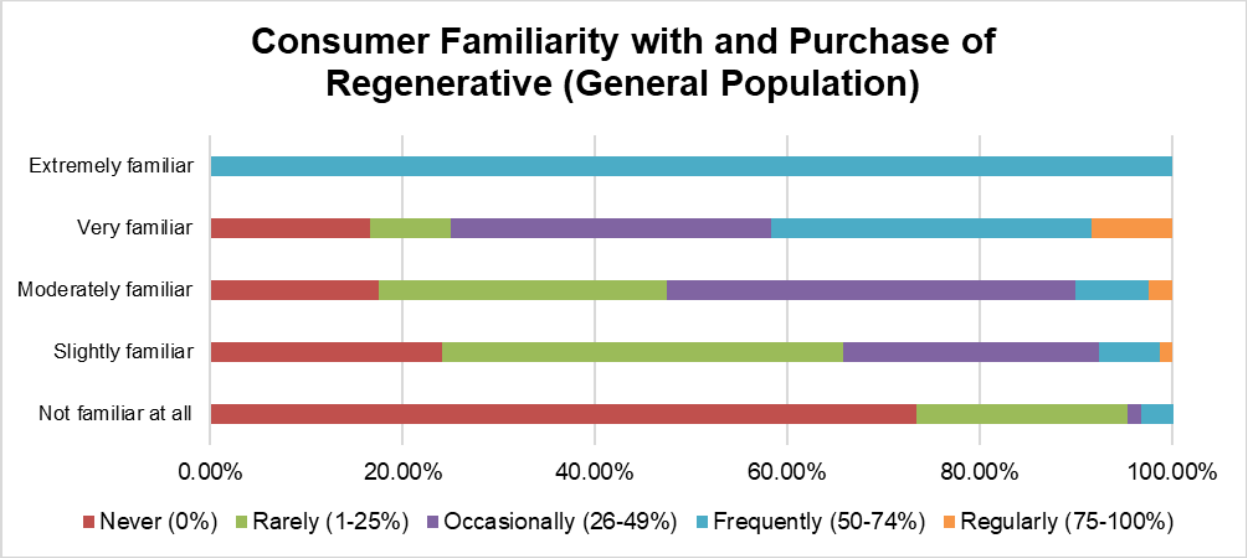


Figure 27: How familiar are you with “regenerative” terminology that is now being used to describe some foods – such as “regenerative ag,” “grown regeneratively,” “Regenerative Organic Certified,” “made with regenerative ingredients,” etc. and In the last year, how often have you purchased the following kinds of products? (General Population)

General population consumers who were unfamiliar with regenerative correlated with a lower purchase frequency. 42.05% of general population consumers who were “moderately familiar” had “occasionally” purchased regenerative products in the past year. 33.33% of consumers who were “very familiar” had “occasionally” and “frequently” purchased regenerative products in the past year. Perhaps most notable,100% of general population consumers who were “extremely familiar” with regenerative had “frequently” purchased regenerative products in the last year.

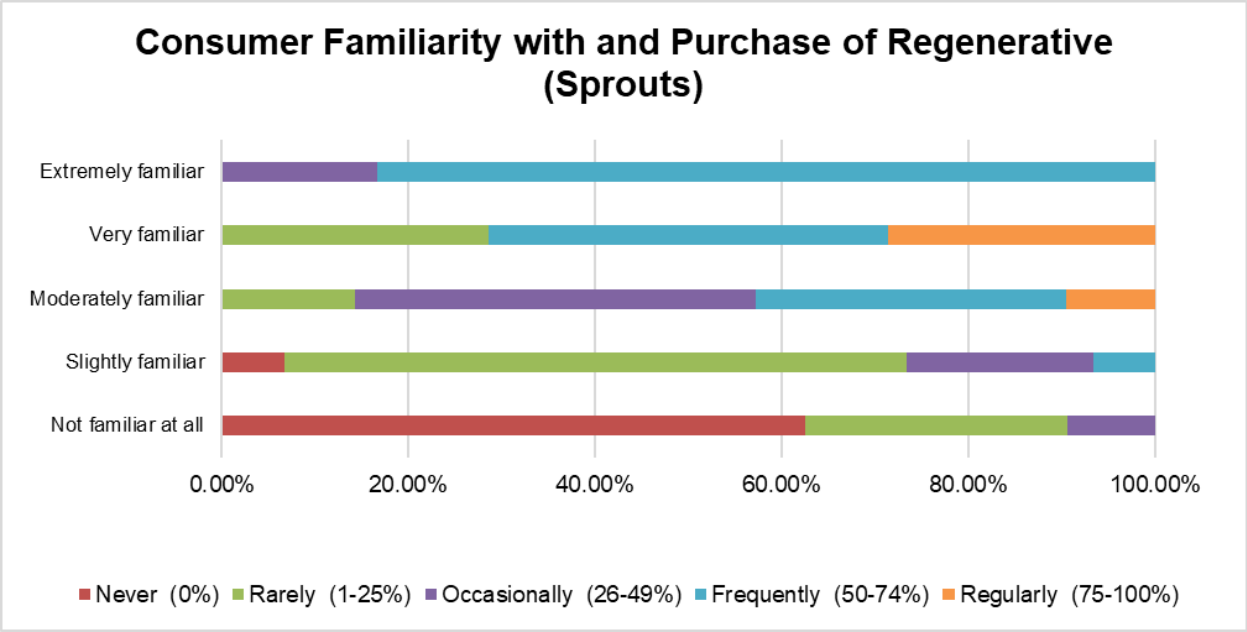


Figure 28: How familiar are you with "regenerative" terminology that is now being used to describe some foods – such as "regenerative ag," "grown regeneratively," "Regenerative Organic Certified," "made with regenerative ingredients," etc. and In the last year, how often have you purchased the following kinds of products? (Sprouts)

Sprouts consumers appeared to have a higher purchase rate of regenerative products and 62.05% of Sprouts consumers who had "never" purchased a regenerative product in the last year were "not familiar at all" with regenerative. Of Sprouts consumers who were "slightly familiar" with regenerative, only 6.67% had "never" purchased a regenerative product. Sprouts consumers who were "moderately familiar," "very familiar," or "extremely familiar" purchased regenerative products at a frequency of "rarely" or higher.

Additional Factors That Impact Consumer Motivations for Shopping Regenerative

To better understand both general population consumers' and Sprouts consumers' rationale, the research team asked: "What are the primary reasons you have not purchased any/more regenerative products?" with the option to check all that apply from a list of options, shown in Figure 29 below.

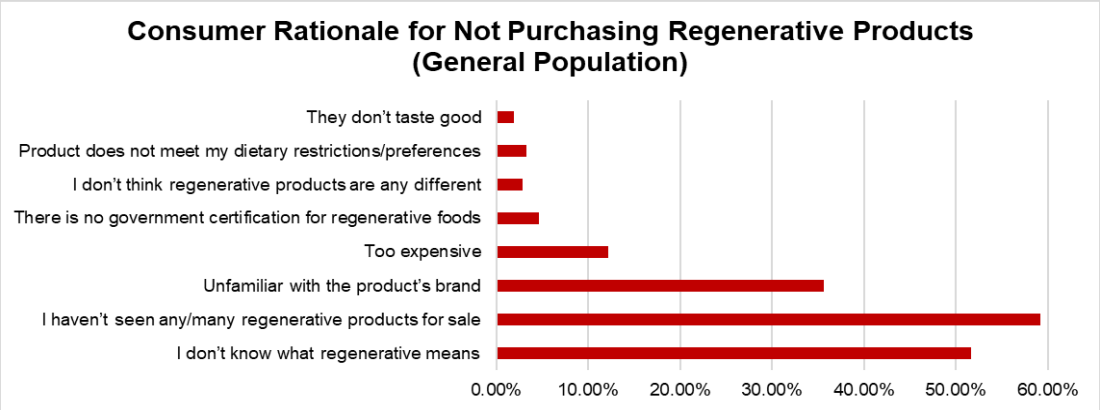


Figure 29: What are the primary reasons you have not purchased any/more regenerative products? (check all that apply) (General Population)

Across general population consumers, 59.15% responded "I haven't seen any/many regenerative products for sale," 51.64% responded "I don't know what regenerative means," and 35.68% responded "Unfamiliar with the product's brand."

All of this again suggests that we are in the early stages of the regenerative foods marketplace, and that the primary barriers to growth are accessibility, awareness, and familiarity instead of any fundamental conceptual or philosophical problems.

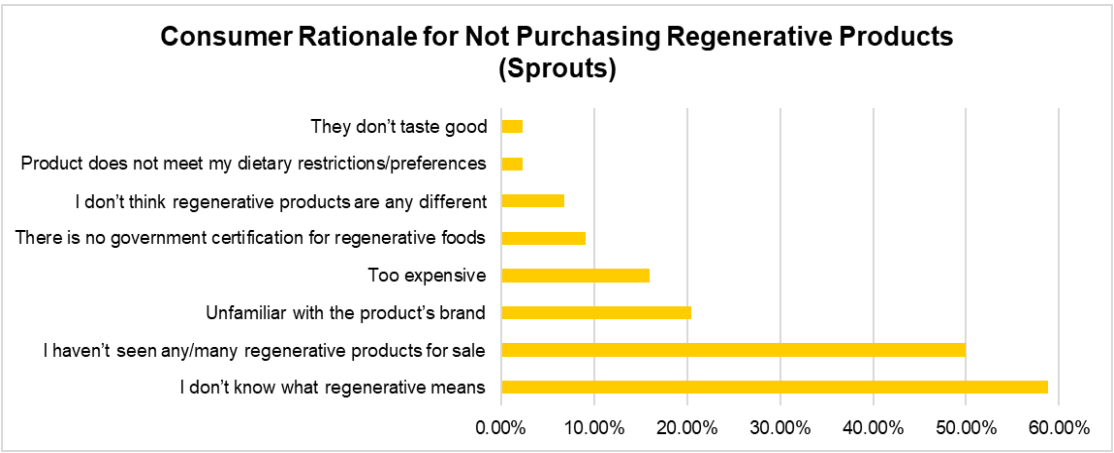


Figure 30: What are the primary reasons you have not purchased any/more regenerative products? (check all that apply) (Sprouts)

Within the Sprouts consumer sample, 58.02% responded "I don't know what regenerative means" and 50% responded "I haven't seen any/many regenerative products for sale." Cost and lack of brand familiarity also influenced Sprouts consumers' decision to shop regenerative.

It appears that across samples “I haven’t seen any/many regenerative products for sale” and “I don’t know what regenerative means” are the two largest drivers in whether a consumer has shopped regenerative. This aligns with an earlier question referenced above that found over half of general population consumers and nearly 40% of Sprouts consumers were “not at all” familiar with regenerative.

Considering that our data found a higher likelihood of purchasing regenerative products for those who were “very familiar” and “extremely familiar” with regenerative, brands, producers, and retailers must consider consumer education in their movement towards regenerative, which will be explored further in the discussion. Brand familiarity was another driving factor in the purchase of regenerative products and something our research team explored across consumer samples.

Consumer Reaction to Regenerative Marketing Claims

The research team also provided each sample group with a range of statements, used by various companies in their branding of regenerative products currently on the market to gauge reactions and try to determine if certain types of messages are resonating better than others. The statements include:

- “This coffee fights climate change.”
- “Oats that go beyond sustainability.”
- “Supporting regenerative farmlands.”
- “Made with climate smart kernza grains which can help improve soil health and water health.”
- “Supporting growers, protecting habitat, and conserving and regenerating resources.
- “Eating is activism.”
- “25% lower greenhouse gas emissions.”
- “Small family farms that never use GMOs, herbicides, or pesticides.”
- “Better for you and the planet.”
- “Full of good stuff.”

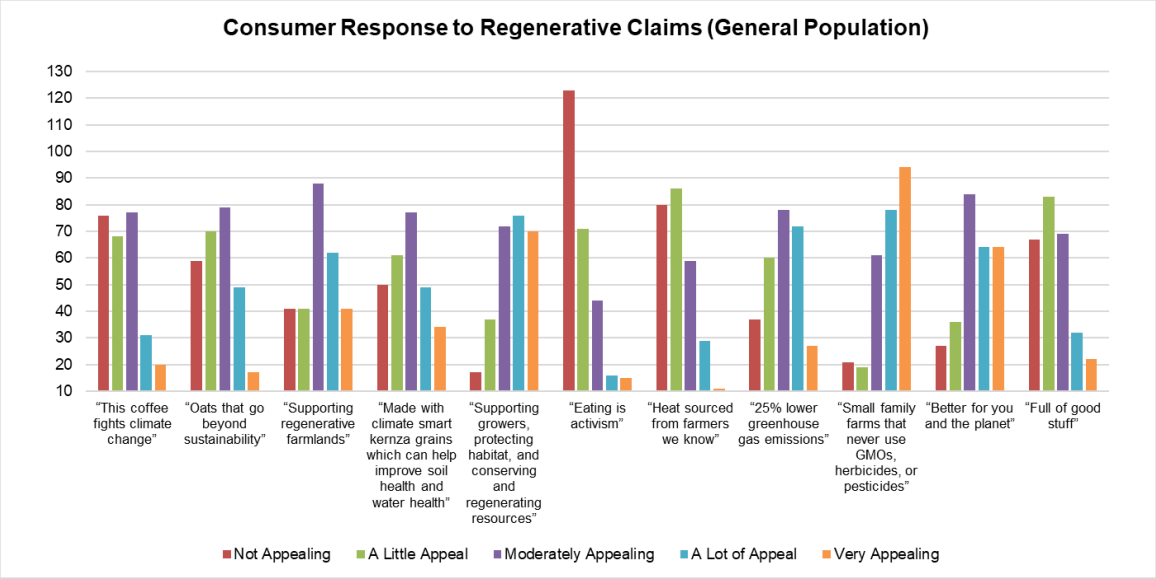


Figure 31: The following are claims that some food manufacturers make about their products. Ignoring whether you do or don't like the type of food mentioned, and focusing more on the language of the claim, for each one, indicate how much the claim appeals to you (General Population)

When assessing general population consumer response to various regenerative claims, one glaring finding is that over 120 respondents, or 45.72% of the sample, found "Eating is activism" to be "not appealing." Conversely, 27.94% of the general population found "Supporting growers, protecting habitat, and conserving and regenerating resources" to have "a lot of appeal." Also, 34.43% found "Small family farms that never use GMOs, herbicides, or pesticides" to be "very appealing."

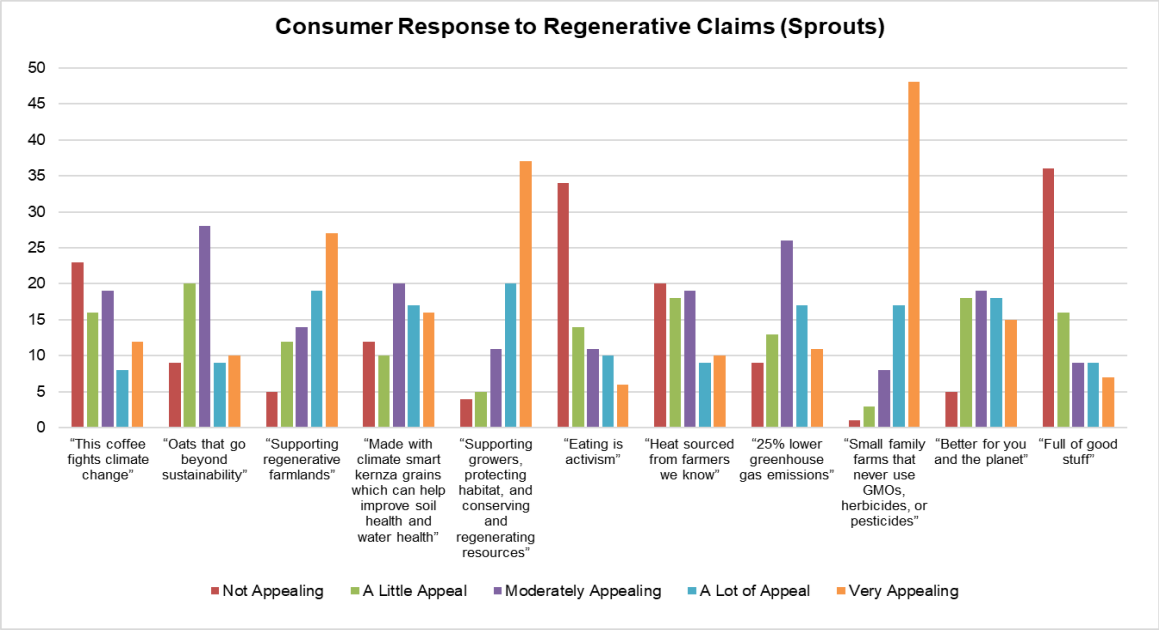


Figure 32: The following are claims that some food manufacturers make about their products. Ignoring whether you do or don't like the type of food mentioned, and focusing more on the language of the claim, for each one, indicate how much the claim appeals to you (Sprouts)

Across the Sprouts sample, one clear claim that resonated with Sprouts consumers is "Small family farms that never use GMOs, herbicides, or pesticides" with 62.34% of Sprouts consumers finding this claim "very appealing." Another claim Sprouts consumers found "very appealing" was "Supporting growers, protecting habitat, and conserving and regenerating resources." This reaction is not surprising when considering that in assessing Regeneration International's definition of regenerative agriculture, 74.36% of Sprouts consumers reacted "very favorably" to "build soil health," 61.54% responded "very favorably" to "[build] crop resilience and nutrient density," and 56.41% responded "very favorably" to "holistic land management practice." "Full of the good stuff" and "Eating is activism" were mostly "not appealing" to Sprouts consumers.

"Small family farms that never use GMOs, herbicides, or pesticides" was the only statement ranked as "very appealing" across samples and the only statement to receive "very appealing" as the most common response among general population consumers. This aligns with respondents across both samples being motivated by "health for myself and family" and "pesticide, herbicide and synthetic fertilizer free." One could make the argument that this marketing claim could also describe an organic product, as some regenerative practices include the use of pesticides and herbicides. Both samples did not find action-oriented statements like "This coffee fights climate change" or "Eating is activism" very appealing, nor did they react favorably to "Full of the good stuff."

As food retailers develop strategies to introduce and market regenerative products, focus groups may be useful as they allow for targeted introduction and the opportunity to collect feedback from the wider market. While many consumers are currently unfamiliar with regenerative, interest increases with familiarity. Producers, brands, and food retailers must activate the interest of consumers to sustain and transform the regenerative movement.

Discussion and Recommendations

This discussion aims to enrich current discourse surrounding regenerative agriculture and the implications of this growing movement for food retailers through interpretation and analysis of survey results. Food retailers can harness the potential value of investing in regenerative agriculture through deeper understanding of consumer purchasing motivation, consumer awareness of regenerative agriculture, and consumer attitude towards regenerative marketing claims currently on the market. Finally, this discussion will use the survey results to provide recommendations aimed at supporting stakeholders in navigating the emerging field of regenerative agriculture.

Through analyzing the general population and survey results data, at least two key trends emerged. First, although many consumers were unfamiliar with the term "regenerative agriculture," participants from both survey groups expressed interest in, and willingness to pay more for regenerative products. Second, health considerations for the consumers and their families arose as a primary motivator for food purchasing decisions.

While regenerative agriculture has undoubtedly become a movement, there is little existing research focused on consumer perspectives. Our research found that 52.69% of general population consumers were "not at all familiar" with regenerative agriculture while 28.32% were "slightly familiar," 14.34% were "moderately familiar," 4.30% were "very familiar," and "0.36%" were "extremely familiar." Across the Sprouts sample, 39.02% of consumers were "not at all familiar" with regenerative while 18.29% were "slightly familiar," 26.83% were "somewhat familiar," 8.54% were "very familiar," and 7.32% were "extremely familiar."

While many consumers had limited awareness of regenerative agriculture, the survey data suggests interest in regenerative increases once a definition has been provided. This presents a strong potential for the regenerative market's continued growth as more consumers become familiar with the term. It also unveils the importance of consumer education efforts to expand regenerative agriculture's market reach.

Respondents who indicated they are at least slightly familiar with the term regenerative agriculture were asked to define "regenerative" in a series of phrases or in a sentence in a free response question. Many participants used keywords related to soil health, sustainability, crop rotation, and the protection of natural resources. When describing regenerative agriculture, some consumers described outcomes rather than practices, which indicates some consumer awareness of general principles associated with regenerative agriculture. However, some general population consumers also equated

“regenerative” with genetically modified organisms (GMOs), synthetic ingredients and lab grown meat. These responses may have been influenced by the myriad of definitions for regenerative agriculture, or these consumers could have associated regenerative with GMOs and synthetics because they understand some regenerative certifications allow GMOs. They may also be confusing regenerative with another term. While the exact cause of these responses is indiscernible, the research team has uncovered that while some consumers have an understanding of regenerative agriculture, many are still unfamiliar with the term. This becomes increasingly complicated as the literature review uncovered no clear or legal definition for regenerative agriculture.

Retailers and brands may find it beneficial to market the health benefits associated with regenerative products considering that “health for myself and/or family” emerged as a top value across both samples. Additionally, “health for myself and/or family” was the primary motivator for the purchase of foods with natural and organic ingredients across both samples and the primary motivator for the purchase of environmentally responsible products in the general population sample. An emphasis on the possible health benefits of regenerative products may motivate consumers to purchase regenerative products. The Nutrient Density Alliance has also highlighted the need to engage consumers in respect to the health benefits of regenerative agriculture:

> The health and wellness sector tied to “healthy eating, nutrition and weight loss” stands at $1 Trillion as of 2023, which means the consumer is a critical stakeholder group to create balance within the unfolding RA movement: their support is required for sustaining it in the long term as a system of positive transformation. (Nutrient Density Alliance, 2024, 6)

Simple, easy to remember phrases such as “Nourished Soil = More Nutritious Food = Healthier People” (Nutrient Density Alliance) can effectively communicate the benefits of regenerative products in online and in-store promotions, as well as in weekly ads.

Another primary motivator for consumers who found value in environmentally responsible products and natural or organic ingredients was “pesticide, herbicide, and synthetic fertilizer free.” A total of 12% of general population consumers and 36.3% of Sprouts consumers identified this notion as a primary motivator for purchasing environmentally responsible foods while 19.6% of general population consumers and 25% of Sprouts consumers indicated “pesticide, herbicide, and synthetic fertilizer free” as their primary motivation for purchasing foods with natural and organic ingredients.

Consumer preference towards purchasing foods free of pesticides, herbicides, and other synthetic fertilizers presents an interesting contribution to the discourse surrounding big tent and purist perspectives on regenerative agriculture, particularly as

big tent and purist conversation is largely unexamined in literature focused on regenerative agriculture.

When consumers were asked about their interest in purchasing regenerative AND organic products, 6.47% of general population consumers indicated “no interest at all,” 18.7% indicated “a little,” 30.94% indicated “a moderate amount,” 20.14% indicated “a lot,” and 23.74% indicated “a great deal.” 5.13% of Sprouts consumers indicated “no interest at all” in the purchase of regenerative AND organic products while 12.82% indicated “a little,” 19.23% indicated “a moderate amount,” 12.82% indicated “a lot,” and 50% indicated “a great deal.” The research team also recognizes the potential for ambiguity in how respondents understand “regenerative AND organic.” While respondents may have responded to this question thinking about regenerative and organic as separate entities, capital letters demonstrate the research team’s intention to to imply that a product would be both regenerative and organic.

Consumer interest in regenerative AND organic products across both samples, but especially in the Sprouts sample as it was composed of self-selected natural food consumers, is especially relevant as pesticide use is one of the dividing factors in whether a regenerative product is conventionally regenerative or regenerative organic. The research team also gauged consumer interest in purchasing regenerative products (see Discussion or Appendix E). While there was clear appeal in products free of pesticides, herbicides, and synthetics, the survey did not ask consumers to rank their preference in purchasing regenerative products versus regenerative AND organic products. While many organizations and brands work towards regenerative organic, there are still companies and brands that consider regenerative an alternative agriculture movement in its own right. In fact, one of the free responses described regenerative as “an alternative to organic” (see Appendix F).

Consumers across both samples appear to be divided in their response to the influence of third-party certifications in purchasing decisions. This could be surprising given the role third-party certifications play in verifying that products are in fact free of pesticides and herbicides. 56.35% of general population consumers responded that “I am more likely to buy a product if it has more than one third-party seal or certification” while 43.65% responded “The number of third-party seals or certifications does not matter to me.” 45.95% of Sprouts consumers responded that “I am more likely to buy a product if it has more than one third-party seal or certification” and 54.05% of Sprouts consumers responded that “the number of third-party seals or certifications does not matter to me.”

In regard to price sensitivity surrounding regenerative purchases, most consumers expressed a willingness to pay up to 5% more for regenerative products. Additionally,

consumers expressed a higher willingness to pay for regenerative produce, meat and dairy, in comparison to other commonly purchased foods. While consumers are willing to pay more for certain regenerative items, risk of asymmetry on the market could diminish trust and willingness to pay over time. While food labels and third-party certifications may contribute to successful regenerative sales, this paper's literature cited just 12 of the regenerative labels currently in the marketing space, which suggests that asymmetry has already begun.

Asymmetric labeling in today's regenerative movement could be compared to that of the organic industry prior to the 1990s. The organic movement gained momentum throughout the 1970s in tandem with the larger environmental movement. The first organic standards and certifications came from the California Certified Organic Farmers (Riddle et al.). Soon after, there was a boom in standards and certifications associated with organic, though there was no legal framework to define organic. The EPA found that "More than 40 private organizations and state agencies (certifiers) certify organic food. But their standards for growing and labeling organic food may differ" (EPA, 2015). This multitude of organic labels and seals saturated the market and confused consumers in the process. This prompted USDA intervention and ultimately resulted in the introduction of the 1990 Organic Foods Production Act, subsequent passage of the National Organic Program and the introduction of the USDA Organic seal (SARE, 2022).

The mixed interest in third-party certification across general population consumers and Sprouts consumers indicates the need for future research to determine the best course of action to create symmetric labeling for the regenerative movement. In the meantime, consumer education as it pertains to regenerative labeling will be critical in efforts to mitigate consumer confusion.

Recommendations

Consumer Education

Prior to this study, over 50% of general population consumers and nearly 40% of Sprouts consumers were "not at all" familiar with regenerative agriculture. This elevates the need for comprehensive consumer education as well as continued research on consumer awareness of regenerative. This study as well as previous studies by the International Food Information Council found that interest in regenerative agriculture increases upon introduction of the term (International Food Information Council, 2022). Future studies should continue this research to create enough scholarly research to quantify this finding.

Food retailers could also hold focus groups to better understand consumer reaction to claims from regenerative products already on the market before introducing those products to a wider consumer audience. Food retailers with store brand regenerative products, like Thrive Market, may be especially curious about consumer perspective in the branding of their regenerative branding. Food retailers can also leverage resources like SPINS to better understand trends for consumers who are familiar with regenerative and target consumer education based on the findings. Finally, food research could tailor these findings in the development of in-store advertisements, weekly ads and promotions, blog posts which feature regenerative brands, content creation for social media challenges, and other consumer marketing methods.

Marketing the Health Benefits of Regenerative Products

This study uncovered health as the top value for both the general population and Sprouts consumers. Health was the primary motivator for general population consumers who purchase environmentally responsible foods while the primary motivator for Sprouts consumers was purchasing foods that are pesticide, herbicide, and synthetic free foods. Across both samples, health was the primary motivator for general population consumers and Sprouts consumers who purchase organic and natural products, with the purchase of pesticide, herbicide, and synthetic free foods ranked as the second-most primary motivator across samples. When presented with the statement “Small family farms that never use GMOs, herbicides, or pesticides” 94 general population consumers found this statement “very appealing” as did 48 Sprouts consumers, making this claim the most appealing across sample groups.

As food retailers work to develop marketing strategies for regenerative products, they should consider tailoring messaging to include health benefits associated with regenerative products. Brands and food retailers may also consider including messaging around zero usage of GMOs, pesticides, herbicides, and other synthetic fertilizers as applicable given consumer interest. Additionally, food retailers should continue to conduct research to better understand consumers' health motivations when purchasing regenerative as well as regenerative AND organic products. Finally, food retailers should leverage resources like the Nutrient Density Alliance’s 2024 White Paper which outlines opportunities to uplift nutrient density to appeal to more health minded consumers (Nutrient Density Alliance, 2024).

Research to Better Understand Consumer Perspectives on Third-Party Certifications for Regenerative Products

At least 43% of consumers across both samples indicated a preference towards regenerative products with third-party certifications and seals. This finding suggests it may be advantageous for food retailers, like Sprouts, to increase the purchasing power

of regenerative products by featuring products with third-party certifications during in-store or online promotions, as well as in weekly ads. It is also important to recognize that this study cited only 12 of the regenerative certifications currently on the market. The proliferation of regenerative certifications is creating asymmetrical labeling, similar to that seen during the early days of the organic movement. Current research is too limited to truly understand the impacts of asymmetric labeling for regenerative products though producers, brands, and food retailers alike should invest in research that measures whether this asymmetry is causing consumers to be confused, motivated, overwhelmed, or disinterested.

Despite regenerative's similar position to organic prior to the NOP, it is worth highlighting that when consumers were asked "Considering the foods you purchase that promote their healthfulness or environmental responsibility, which statement best describes your attitude?" 16.49% of general population consumers and 19.51% of Sprouts consumers indicated "I only trust an official government seal, or certification such as USDA Organic." Meanwhile, 41.22% of general population consumers and 30.49% of Sprouts consumers selected the statement "I would prefer if there were some sort of third-party seal or certification related to the product's claims about healthfulness or environmental responsibility." 43% of general population consumers and 14.63% of Sprouts said "I require some sort of third-party seal or certification related to the products claims about healthfulness or environmental responsibility." These findings suggest that consumers may be more inclined to purchase regenerative products that have received third-party certification rather than an official government certification.

A 2019 study by New Hope Network's NEXT Data and Insights team entitled "Certifications: What role should they play in your marketing strategy?" found that 78% of brands had at least one certification and 53% of brands had two certifications at Expo West in 2019 (Pierce and Hartt, 2019). The 2024 Natural Products Expo West showcased 34 regenerative products (Beacon Discovery). The number of regenerative products at the 2024 Expo West could persuade organizations like New Hope Network or similar entities to collect data about consumer preferences for regenerative labels - particularly since this study found that most consumers prefer private third-party certification. Further research on consumer preferences regarding third-party certifications will better support retailers, like Sprouts Farmers Market, in knowing which regenerative products consumers would be most interested in purchasing.

Continued Research on Consumer Perspective on the Environmental Benefits of Regenerative Agriculture

Many companies and environmental organizations have positioned regenerative agriculture as potentially transformative in efforts to curb climate change. This has

influenced the design and branding of regenerative claims. However, when general population consumers were asked to respond to regenerative claims on the market, 76 general population consumers ranked “this coffee fights climate change” as “not appealing” (see Figure 31) while 23 Sprouts consumers (see Figure 32) found this same statement “not appealing.” It is worth highlighting that these responses were collected after consumers across both samples who had familiarity with the term regenerative included comments around climate change and other environmental, or planetary outcomes (see Appendix F). Mention of climate change may be correlated with the nearly 25% of general population consumers who ranked “climate-friendly” as a primary motivator for purchasing environmentally responsible foods (see Figure 10). There was a slightly better but still modest positive response to “better for you and the planet” with 27 general population consumers (see Figure 31) and only 5 Sprouts (see Figure 32) consumers indicating this statement was “not appealing.”

This study also gauged consumer reaction to various parts of Regeneration International’s definition of regenerative agriculture. 46% of general population consumers and 74.36% of Sprouts consumers reacted “very favorably” to “build soil health” while 41.30% of general population consumers and 61.54% of Sprouts consumers responded “very favorably” to “[build] crop resilience and nutrient density.” While environmental responsibility was not a top value for consumers across both samples, descriptions and phrases provided by consumers coupled with reaction to various parts of Regeneration International’s definition of regenerative demonstrates some environmental consciousness. Specifically, interest in soil health and nutrient density could present an opportunity for the regenerative movement to consider a food-as-medicine approach. Food retailers could also consider discussing the intersections of planetary health with human health in any storytelling, or narratives, as health was a top value across both samples.

While environmental responsibility was not a top value across either the general population and Sprouts sample, future studies should continue this research with statistically significant samples to better support food retailers, and other stakeholders, in understanding opportunities for environmental appeal within the marketing of regenerative products.

Conclusion

Regenerative agriculture has the potential to improve soil health, mitigate climate change, and nourish biodiversity. But there are few peer-reviewed studies that document its links to nutrient density, the environmental outcomes of implementing regenerative practices over time and consumer preferences. This report aimed to fill some of these gaps through examining consumer attitudes towards regenerative agriculture.

There are various approaches Sprouts Farmers Market, and other retailers, should consider when investing in regenerative including consumer education, marketing the health benefits of regenerative agriculture, further studies on the role of third-party certifications in consumer purchasing decisions, and further studies consumer perspectives on the environmental benefits of regenerative.

The limited consumer research on regenerative has revealed that many consumers are unfamiliar with the term despite its rise in popularity over the last decade. However, this study and similar studies like “Consumer Perspectives on Regenerative Agriculture” conducted by the International Food Information Council have found that consumers who were once unfamiliar with regenerative agriculture become interested after being presented with a description of all that regenerative entails. Future studies should continue to quantify this finding by researching consumer familiarity with agriculture, particularly as this trend extends across income levels. This study also found that general population consumers and Sprouts consumers consider paying 5% more than what they currently pay a fair price for regenerative.

Health was ranked as a top value for consumers across both samples and remained a primary motivator in the purchase of foods with natural and organic foods. While this study found that environmental responsibility was not a top value across either sample, those who were at least slightly familiar with regenerative across general population consumers and Sprouts included many consumers who were able to describe environmentally beneficial practices and outcomes associated with regenerative agriculture. Additionally, consumers expressed a great deal of interest in the parts of Regeneration International’s definition for regenerative that mention soil health, crop resilience, and nutrient density. Consumers were also drawn to regenerative products with statements that mention small family farms, the protection of farmland, regenerating resources, and zero use of pesticides, herbicides, or synthetic fertilizers. Future research could conduct studies which aim to better understand what can catalyze a consumer from care to consumption. In the meantime, food retailers, especially natural food stores, should consider highlighting the intersections between

human and planetary health in any narrative marketing of regenerative brands, or products.

Regenerative has no legal, or single definition. This heterogeneity coupled with regenerative's boost in popularity has created a proliferation of regenerative seals and certifications in the market. Both general population consumers and Sprouts consumers expressed greater interest in purchasing foods with third-party labels over foods with government seal or certification. This demonstrates promise for third-party certifications to create symmetry in the market, but further research is needed to better gauge consumer perspective of third-party certification specific to regenerative products.

As the regenerative movement continues to evolve, investment in consumer research is critical as deeper understanding of regenerative's consumer base will enable producers, brands and food retailers to unlock all regenerative has to offer. Regenerative agriculture can empower consumers by allowing them to vote with their dollar while transforming our food system in the process.

Appendix

Appendix A: General Population Survey Script

Recruitment Script- Regenerative Aims and Claims Research

Greetings,
We are a team of graduate students under the direction of Professor Joe Dobrow at the Swette Center for Sustainable Food Systems at Arizona State University. We are conducting a research study to better understand what regeneratively produced products are being sold and how you, as a consumer, feel about them.

We are recruiting individuals 18 years or older to participate in a brief online questionnaire which will take approximately 5-8 minutes to complete. Your responses will be completely anonymous, but the aggregated data will go a long way toward helping advance the industry's knowledge about perceptions of regenerative foods.

Your participation in this study is voluntary. If you choose to participate, please review the attached consent form, type in your name as a digital signature at the bottom of it, and complete the survey linked below. If you have any questions concerning the research study, please contact our team at [email address redacted].

Sincerely,

ASU Sustainable Food Systems graduate students

Please note that certain phone numbers, names and email addresses have been redacted from these appendices.

Appendix B: Sprouts Survey Listserv Promotion Script

SUBJECT: Sprouts and ASU want your opinion

Hi <FIRST NAME>,
Sprouts is partnering with Arizona State University graduate students under the direction of Professor Joe Dobrow at the Swette Center for Sustainable Food Systems to better understand consumers' knowledge of regenerative products.

If you are 18 years or older, please help us by participating in a brief survey that should take less than 8 minutes to complete. Your responses will be completely anonymous but will go a long way toward helping advance the industry's knowledge about perceptions of regenerative foods.

Your participation in this study is voluntary. If you choose to participate, please review the attached consent form linked here, type in your name as a digital signature at the bottom of it, and complete the survey.

If you have any questions concerning the research study, please contact our team at [email address redacted].

Sincerely,

Sprouts Farmers Market and ASU Sustainable Food Systems Graduate Students

Please note that certain phone numbers, names and email addresses have been redacted from these appendices.

Appendix C: Survey Consent Form

Regenerative Aims and Claims Survey Consent Form

Graduate students under the direction of Professor Joe Dobrow at Arizona State University Swette Center for Sustainable Food Systems are conducting a research study to better understand what regeneratively produced products are being sold and how you, as the consumer, feel about them.

We invite you to participate in a brief online survey consisting of several multiple choice and open-ended questions, which should take approximately 5-8 minutes of your time to complete. There are no “right” or “wrong” answers; we are simply seeking your opinions and reflections on your experience. You have the right to stop participation at any time.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. You must be 18 or older to participate in the study. There are no foreseeable risks or discomforts in taking this survey, and no direct benefits to you, but your answers will go a long way toward helping advance the industry’s knowledge about perceptions of regenerative foods.

Your responses will be anonymous. No personally identifiable information such as your name or email address is being collected. The aggregated results of this study may be used in reports, presentations, or publications, and shared with food industry experts who partner with the Swette Center. If you have any questions concerning the research study, please contact [contact information redacted]. If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. Please let me know if you wish to be part of the study.

By digitally signing below you acknowledge that you have read the terms and are agreeing to be part of the study. Upon receipt of this form, we will send you an email with a link to the questionnaire.

Thank you for your consideration.

Please note that certain phone numbers, names and email addresses have been redacted from these appendices.

Appendix D: Survey Questions

1. When it comes to shopping for groceries, how often do you shop for your household?
    a. More than half the time- I'm the primary shopper
    b. About half the time- I share responsibility
    c. Less than half the time
    d. Almost never (wouldn't continue survey)

2. About what % of your household's food is purchased in grocery stores or supermarkets (rather than other locations like farmers markets)?
   [slider from 0% to 100%]

3. Rank the top 5 values that guide your food purchases (drag and drop your values, in order)

    a. Health for myself and/or family
    b. Flavor
    c. Organic or Natural ingredients
    d. Price
    e. Environmental responsibility
    f. Convenience
    g. Locally grown/produced
    h. Local business
    i. On sale
    j. Other: fill in the blank

   [for those who include C or E only; otherwise skip to **7**]:

4. What is your primary motivation for buying foods that are environmentally responsible?
    a. Health for myself and/or family
    b. Climate-friendly
    c. Soil-health
    d. Water-smart
    e. Animal wellbeing
    f. Pesticide, herbicide and synthetic fertilizer free
    g. Supporting just and dignified working conditions for farmers and farmworkers
5. What is your primary motivation for buying foods that have organic or natural ingredients?
    a. Health for myself and/or family

b. Climate-friendly
c. Soil-health
d. Water-smart
e. Animal wellbeing
f. Pesticide, herbicide and synthetic fertilizer free
g. Supporting just and dignified working conditions for farmers and farmworkers

6. Considering the foods you purchase that promote their healthfulness or environmental responsibility, which statement best describes your attitude?

    a. I trust the health and environmental claims on the food's packaging
    b. I trust that the standards of the store I am buying from
    c. I would prefer if there were some sort of third-party seal or certification related to the product's claims about healthfulness or environmental responsibility
    d. I require some sort of third-party seal or certification related to the product's claims about healthfulness or environmental responsibility
    e. I only trust an official government seal or certification, such as USDA Organic

7. Which statement best describes your attitude:

    a. I am more likely to buy a product if it has more than one third party seal or certification

    b. The number of third-party seals or certifications does not matter to me

    [For those that chose C, D; otherwise skip to 8]

8. How familiar are you with "regenerative" terminology that is now being used to describe some foods – such as "regenerative ag," "grown regeneratively," "Regenerative Organic Certified," "made with regenerative ingredients," etc.

    1 (not at all) 2 (a little) 3 (moderately) 4 (very) 5 (extremely)

9. In a phrase, series of phrases, or sentence, how would you define regenerative foods? (fill in the blank)

    [For those who answer 2, 3, 4 or 5 to above; otherwise, skip to **10**]

10. In the last year, how often would you say you have purchased the following kinds of products?

    Never Rarely Occasionally Frequently Regularly

(0%) (1-25%) (25-49%) (50-74%) (75-100%)

Organic Foods
Regenerative Foods

11. What are the primary reasons you have not purchased any/more organic products (check all that apply)?
    a. Too expensive
    b. I don't know what organic means
    c. Unfamiliar with the product's brand
    d. Product does not meet my dietary restrictions/preferences
    e. I haven't seen any/many organic products for sale
    f. I don't think organic products are any different
    g. They don't taste good

    [For those who answer Never or Rarely to organic in question 10]

12. What are the primary reasons you have not purchased any/more regenerative products (check all that apply)?
    a. Too expensive
    b. I don't know what regenerative means
    c. Unfamiliar with the product's brand
    d. Product does not meet my dietary restrictions/preferences
    e. I haven't seen any/many regenerative products for sale
    f. I don't think regenerative products are any different
    g. They don't taste good
    h. There is no government certification for regenerative foods

    [For those who answer Never or Rarely to regenerative in question 10]

13. One definition of regenerative comes from the organization Regeneration International: "A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density." How do you react to various parts of that definition? (scale of 1 very unfavorably, 2 somewhat unfavorably, 3 neither favorable or unfavorable, 4 somewhat favorably, 5 very favorably)

    a. "holistic land management practice"
    b. "close the carbon cycle"
    c. "build soil health"
    d. "[build] crop resilience and nutrient density"

14. Based on the definition above, and assuming the flavor, quality, and price are

equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative?

None at all	A Little	A Moderate Amount	A Lot	A Great Deal
(1)	(2)	(3)	(4)	(5)

15. Based on the definition above, and assuming the flavor, quality, and price are equal to other food products you buy, what is your level of interest in purchasing foods labeled/marketed as regenerative AND organic?

None at all	A Little	A Moderate Amount	A Lot	A Great Deal
(1)	(2)	(3)	(4)	(5)

16. The following are claims that some food manufacturers make about their products. Ignoring whether you do or don't like the type of food mentioned, and focusing more on the language of the claim, for each one, indicate how much the claim appeals to you.

    You do not have to give an answer for every claim to continue with the survey.

Not Appealing	A Little Appeal	Moderately Appealing	A Lot of Appeal	Very Appealing
(1)	(2)	(3)	(4)	(5)

    "This coffee fights climate change."
    "Oats that go beyond sustainability."
    "Supporting regenerative farmlands."
    "Made with climate smart kernza grains which can help improve soil health and water health"
    "supporting growers, protecting habitat, and conserving and regenerating resources."
    "eating is activism"
    "wheat sourced from farmers we know"
    "25% lower greenhouse gas emissions"
    "small family farms that never use GMOs, herbicides, or pesticides"
    "better for you and the planet"
    "full of good stuff"

17. What do you think is a fair price for foods marketed/labeled organic?
    a. 5% above what I currently pay
    b. 10% above what I currently pay

c. More than 10% above what I currently pay
d. Not interested

[for those who answer d, skip to question 19]

18. In which departments or categories do you think it would be fair to pay more for organic products? (check all that apply)
    - Produce
    - Meat
    - Seafood
    - Dairy
    - Snacks
    - Cereals
    - Bulk Foods
    - Deli
    - Bakery
    - None of these

19. What do you think is a fair price for foods marketed/labeled regenerative?
    a. 5% above what I currently pay
    b. 10% above what I currently pay
    c. More than 10% above what I currently pay
    d. Not interested

[for those who answer d, skip to question 19]

20. In which departments or categories do you think it would be fair to pay more for regenerative products? (check all that apply)
    a. Produce
    b. Meat
    c. Seafood
    d. Dairy
    e. Snacks
    f. Cereals
    g. Bulk Foods
    h. Deli
    i. Bakery
    j. None of these

21. What is your gender?
    a. Male
    b. Female
    c. Non-binary / third gender
    d. Other: Please specify

e. Prefer not to self-identify

22. What is your age range?
    a. Under 20
    b. 20s
    c. 30s
    d. 40s
    e. 50s
    f. 60s
    g. 70s
    h. 80 or over

23. What is your annual household income? (drop down)
    a. Less than $20,000
    b. $20,001 to $40,000
    c. $40,001 to $60,000
    d. $60,001 to $80,000
    e. $80,001 to $100,00
    f. $100,001 to $120,000
    g. $120,001 to $140,000
    h. $140,001 to $160,000
    i. $160,001 to $180,000
    j. $180,001 to $200,000
    k. More than $20,000

24. What (if any) are the ages of children who live in your household? (check all that apply)
    a. Below 1 year old
    b. 1 to 6 years
    c. 7 to 12 years
    d. 13 to 18 years
    e. Above 18 years
    f. I do not have children in my household

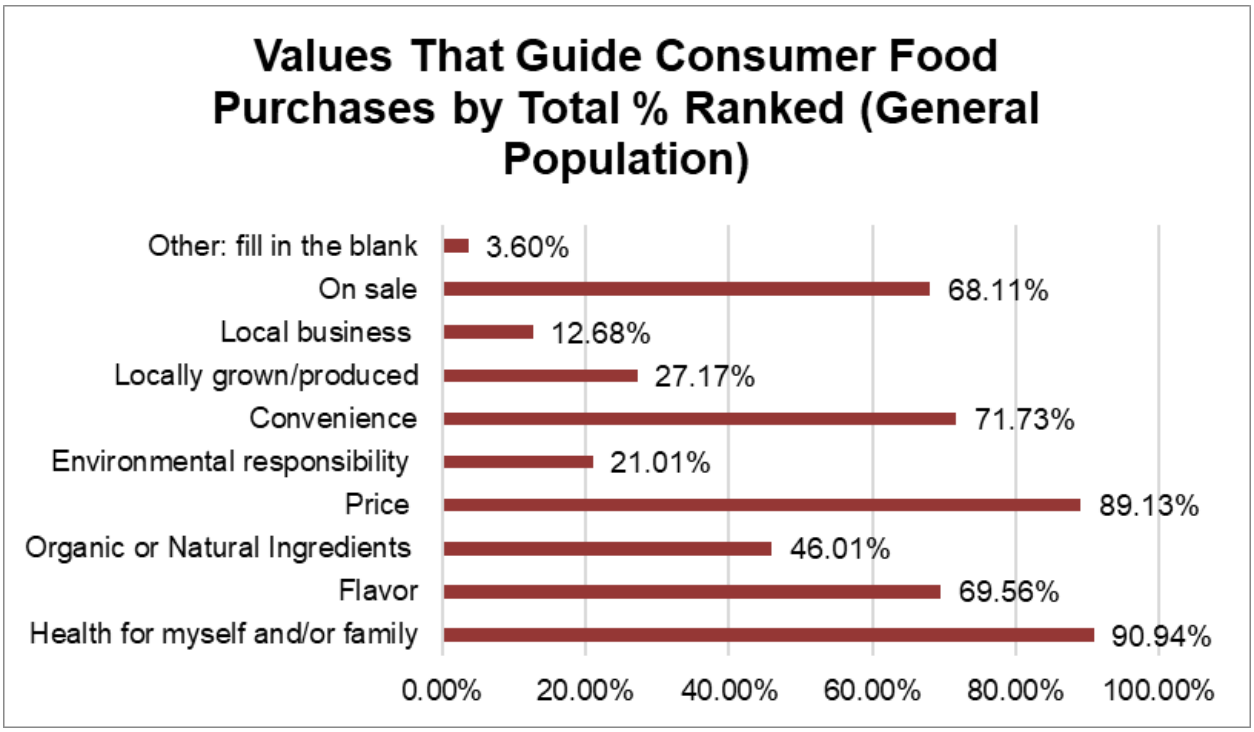
25. What is the highest level of education you have attained?
    a. Some high school
    b. High school degree
    c. Some college
    d. College degree
    e. Some grad school
    f. Grad school degree

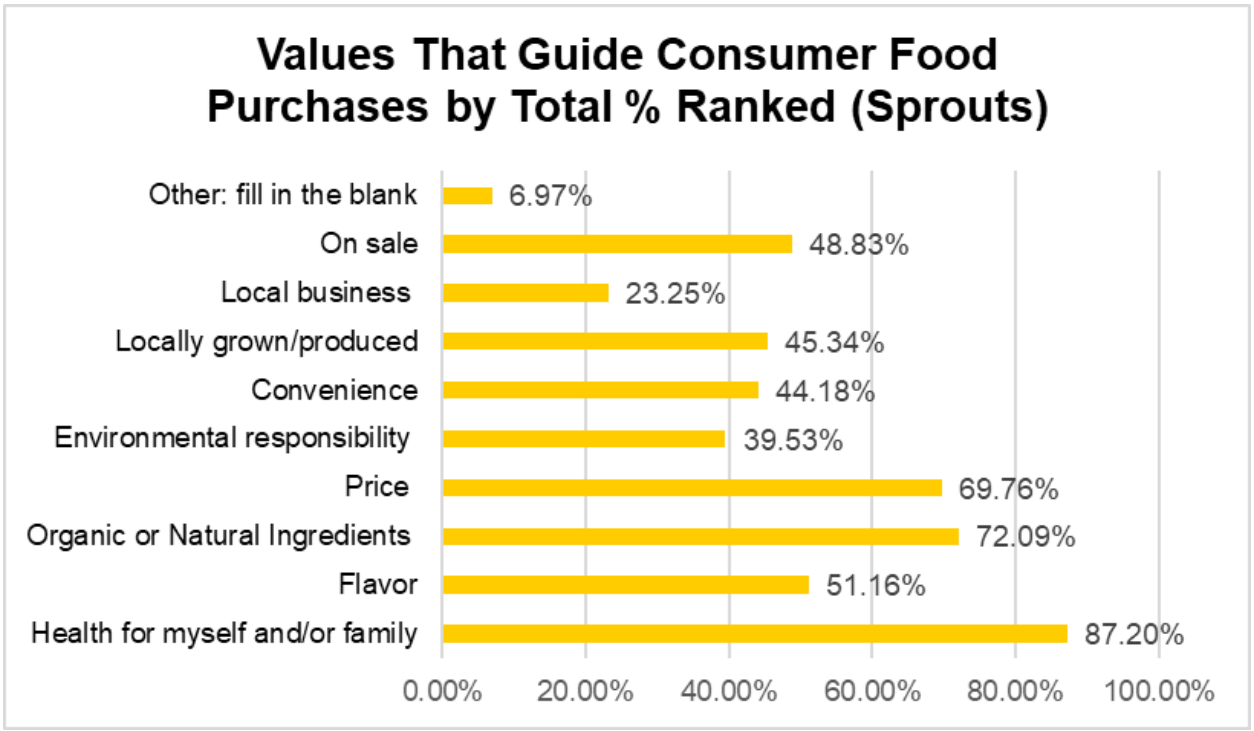
26. Please provide your zip code
    Zipcode

27. Please let us know if you have questions or comments

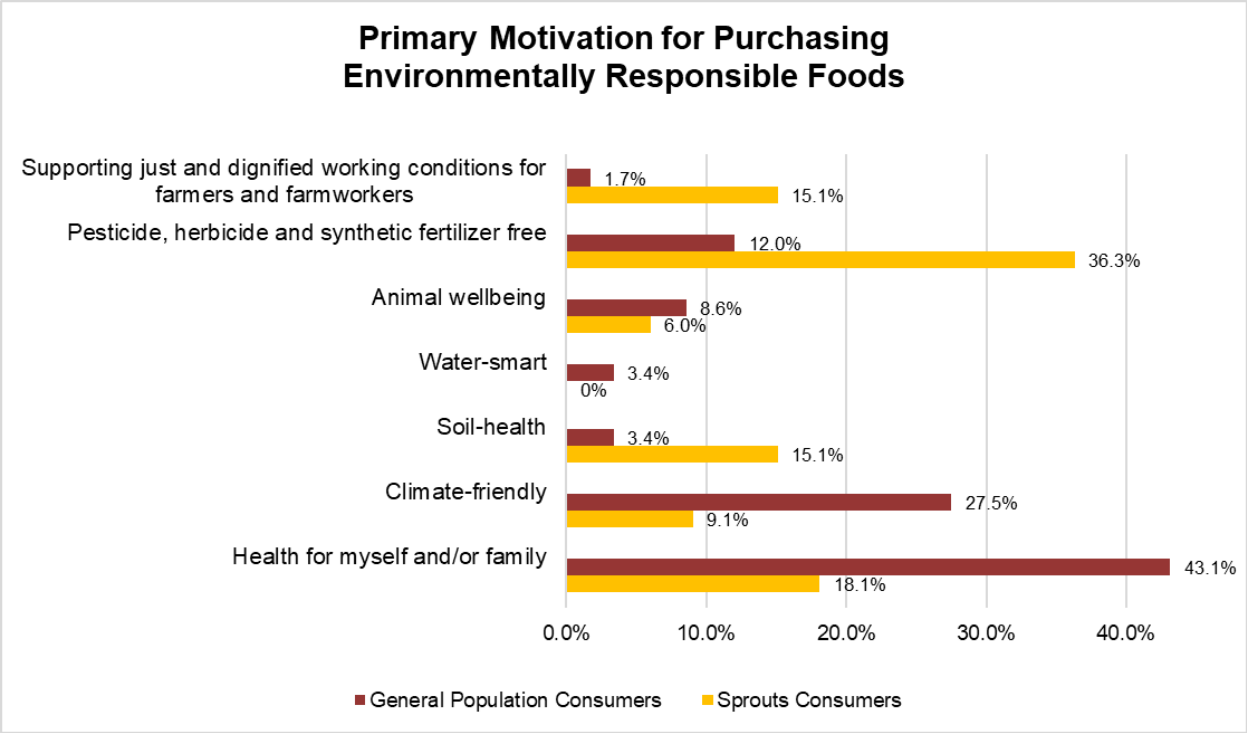
Appendix E : Quantitative Survey Results

Question 3

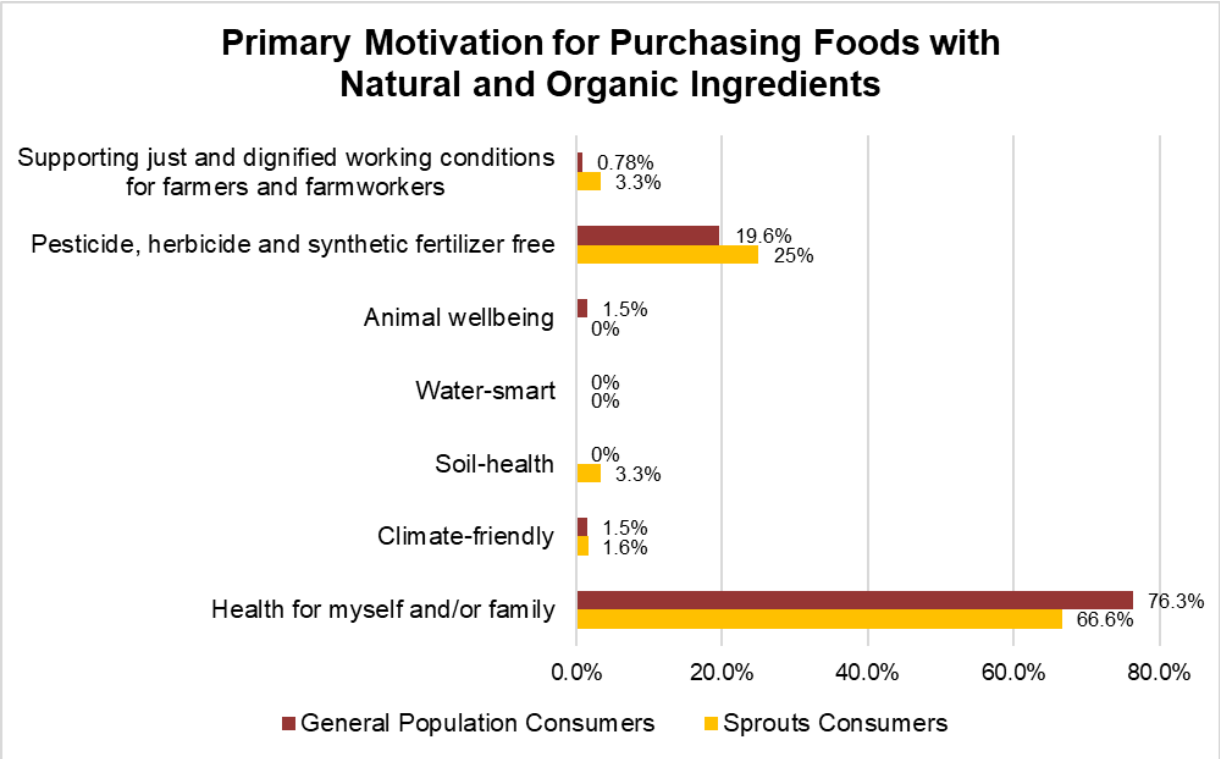




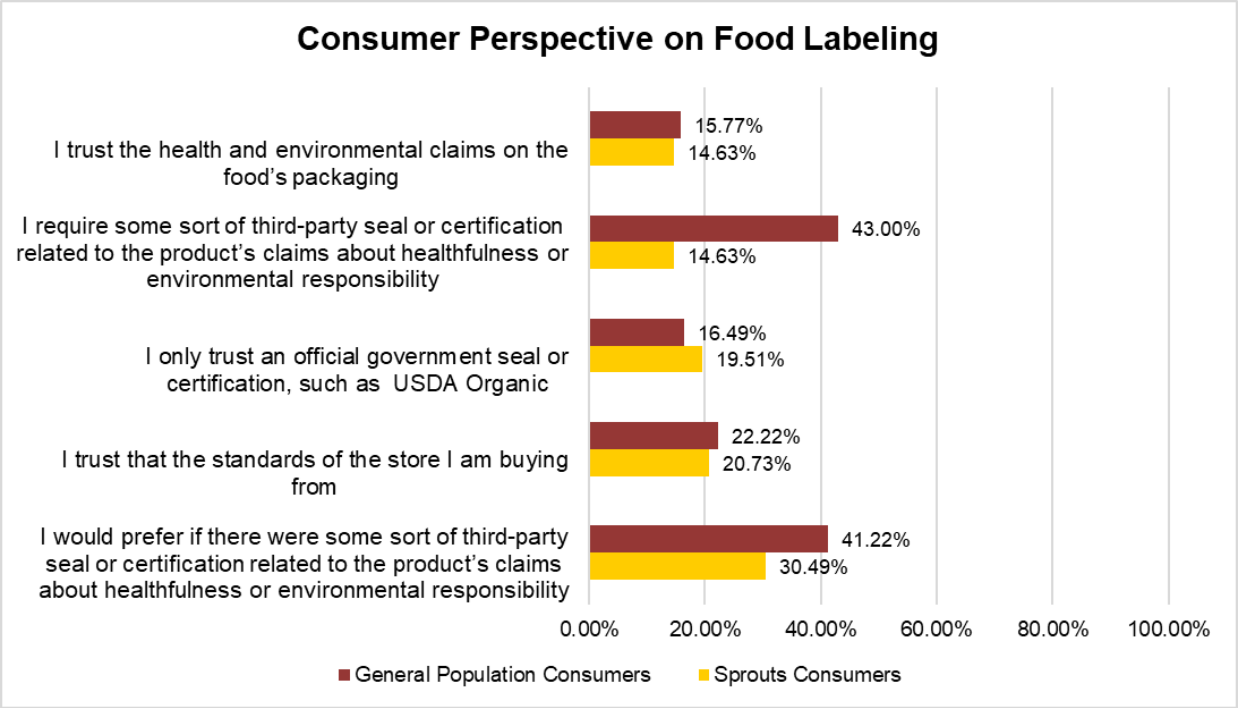
Question 4



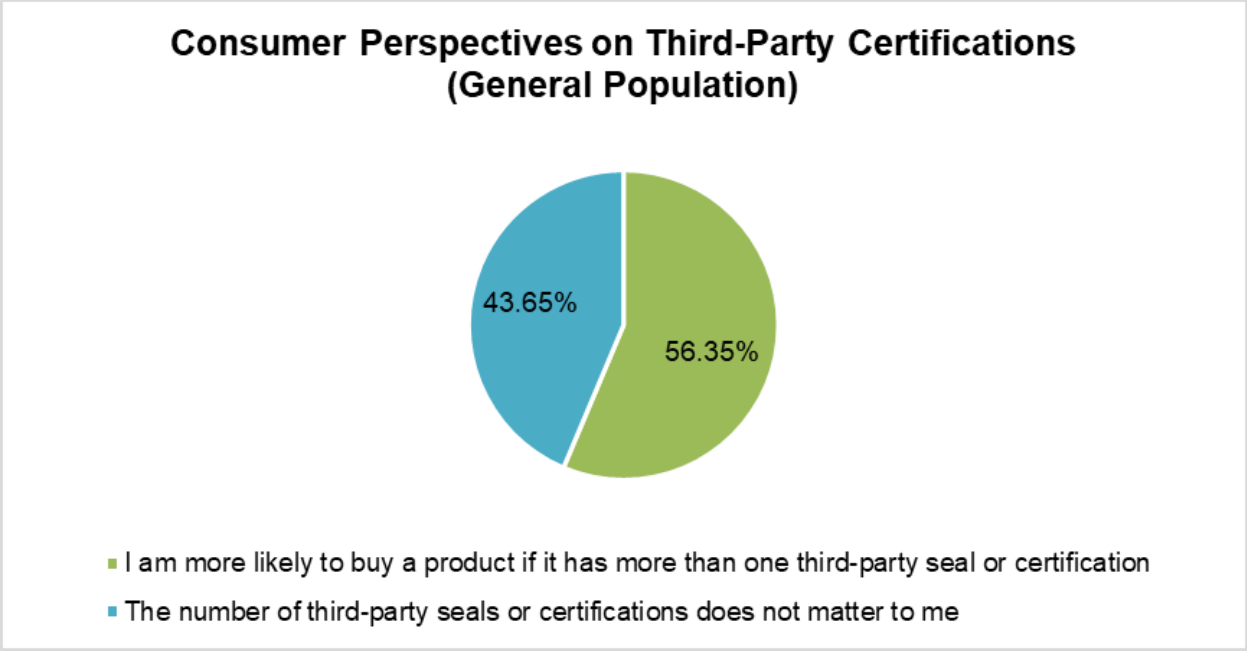
Question 5

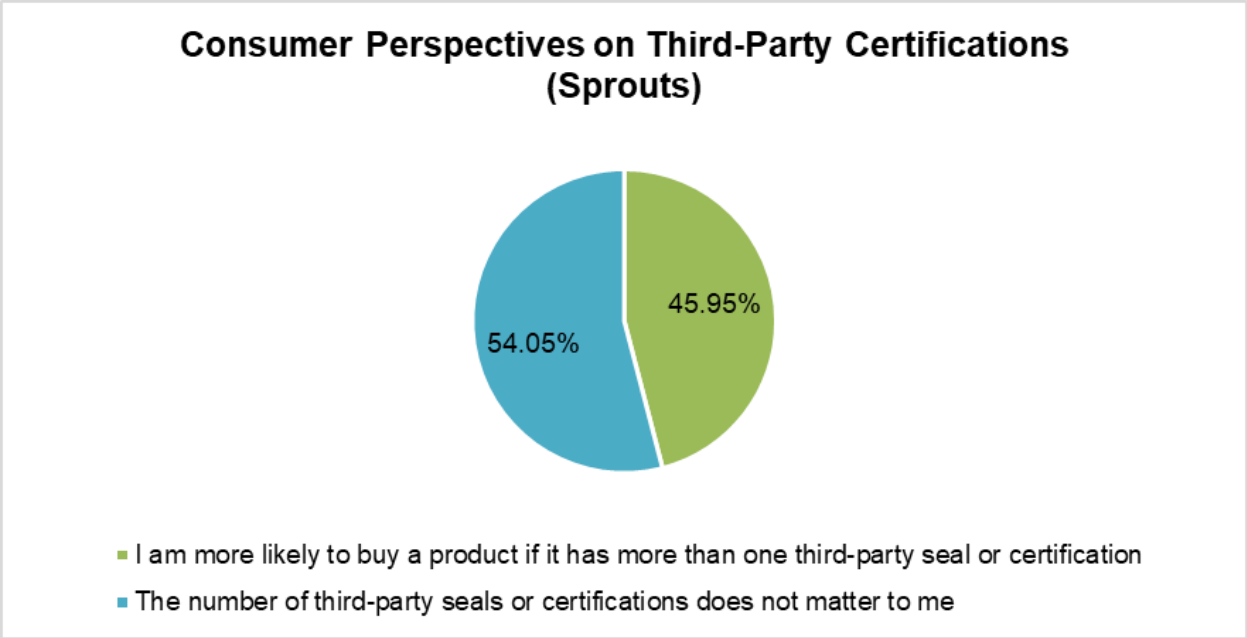


Question 6

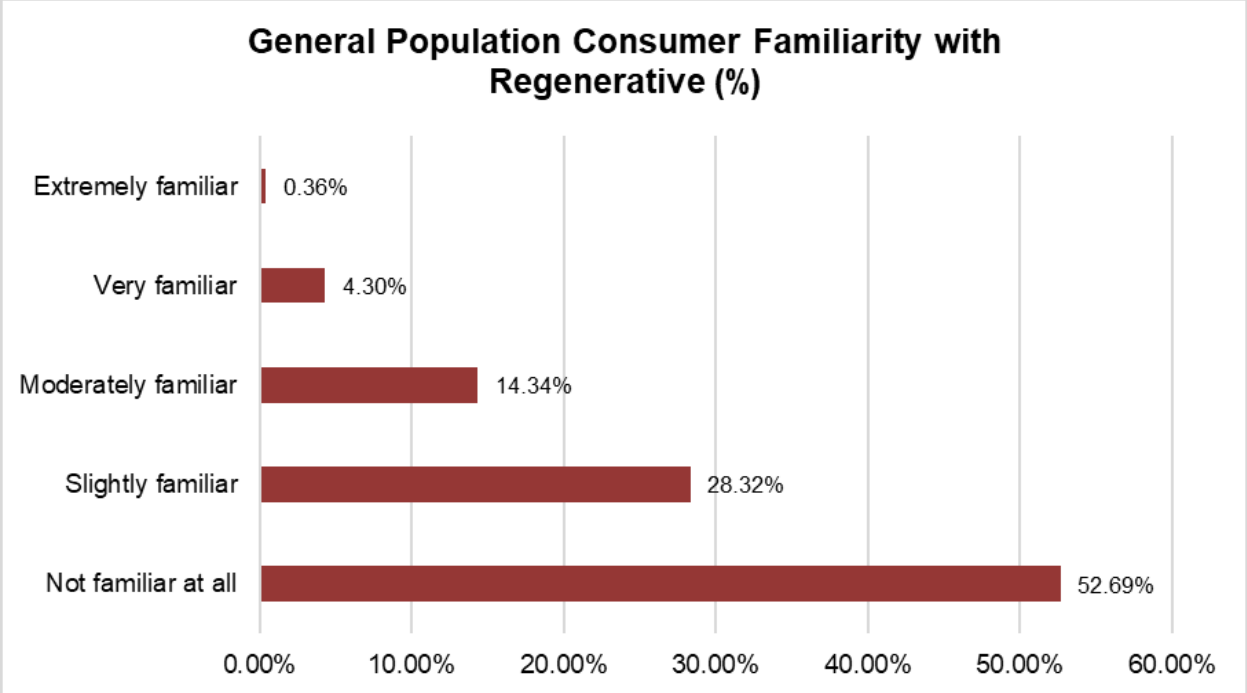


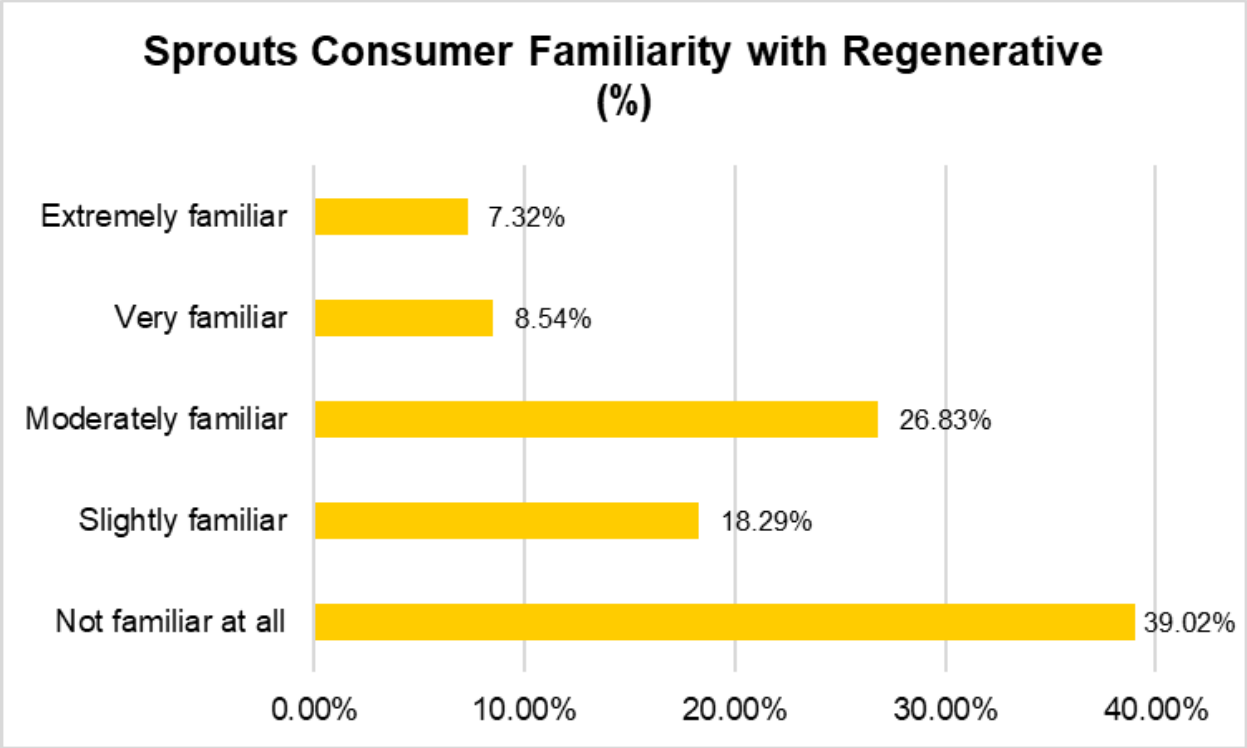
Question 7




Consumer Perspectives on Third-Party Certifications (Sprouts)
45.95%
54.05%
I am more likely to buy a product if it has more than one third-party seal or certification
The number of third-party seals or certifications does not matter to me

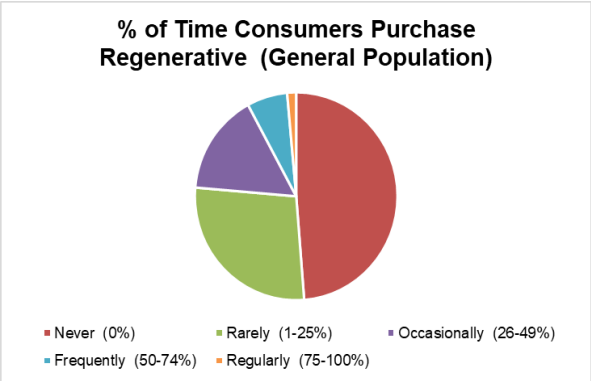
Question 8

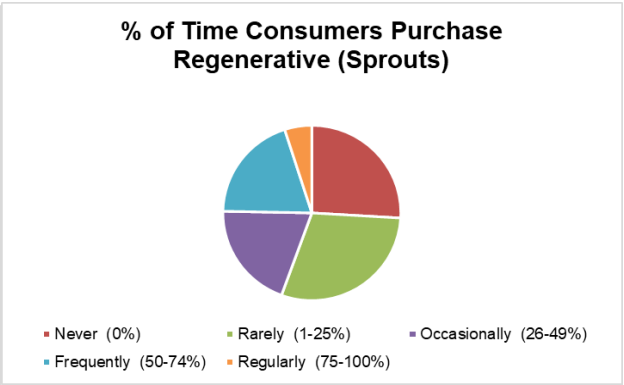

General Population Consumer Familiarity with Regenerative (%)
Extremely familiar
0.36%
Very familiar
4.30%
Moderately familiar
14.34%
Slightly familiar
28.32%
Not familiar at all
52.69%
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
60.00%

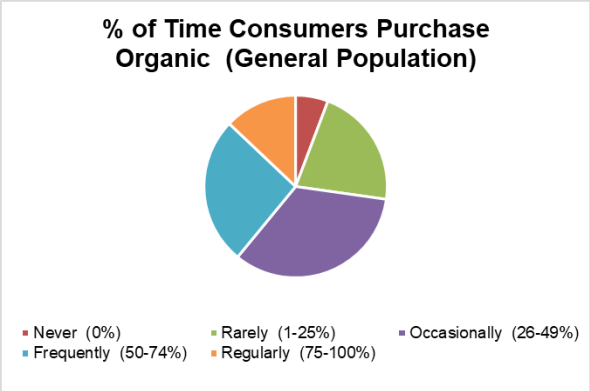


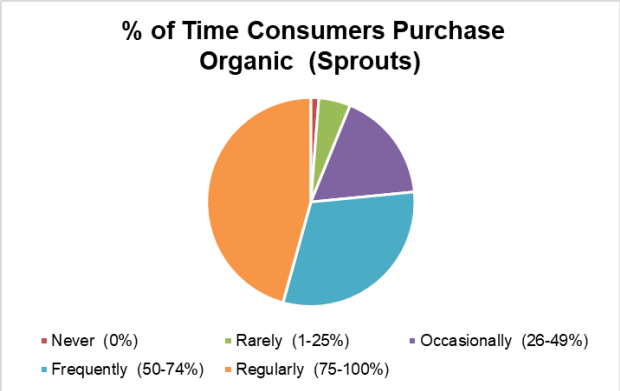
Question 9 [see verbatims]

Question 10

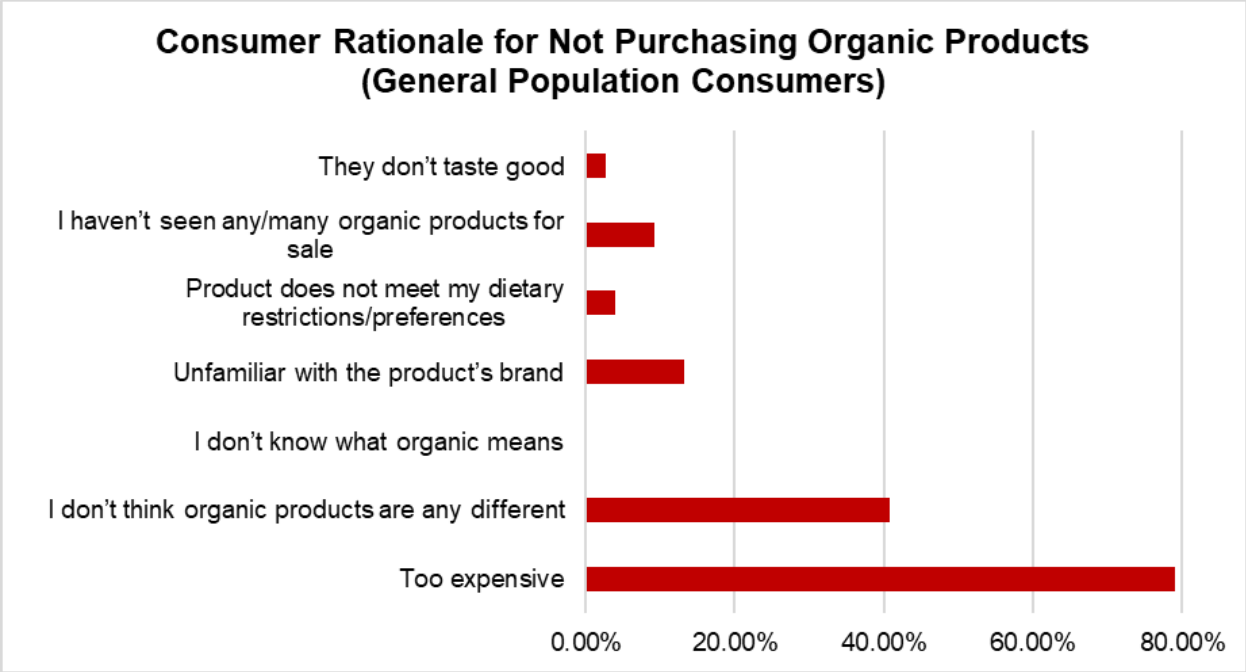


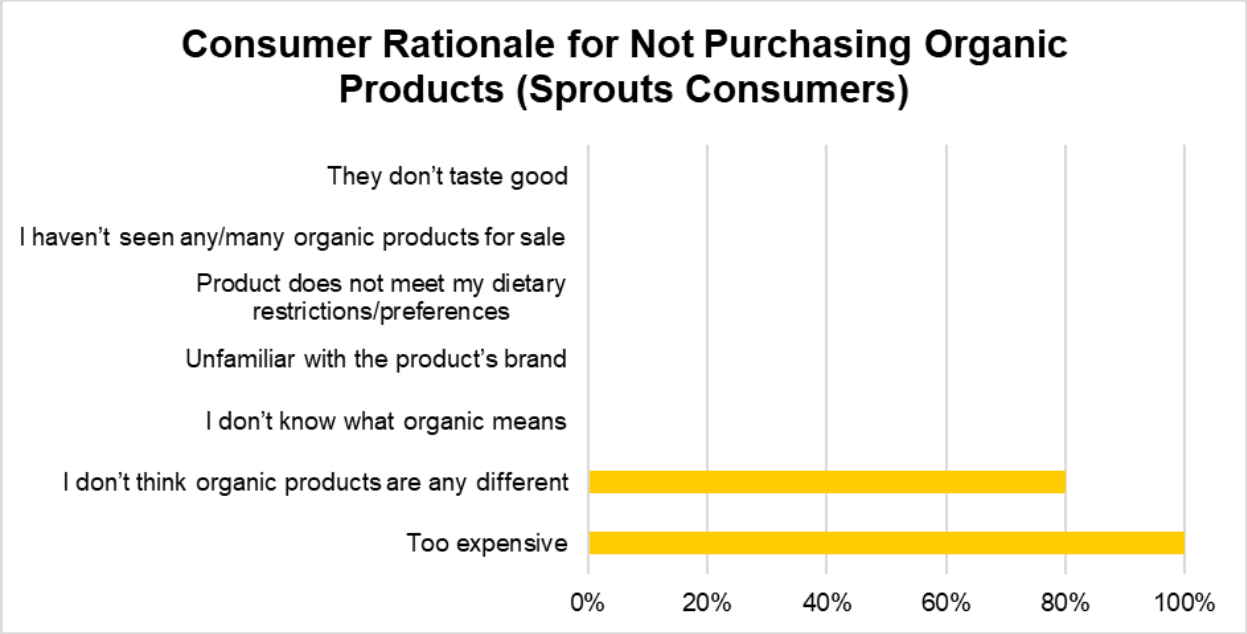



% of Time Consumers Purchase Organic (General Population)
Never (0%)
Rarely (1-25%)
Occasionally (26-49%)
Frequently (50-74%)
Regularly (75-100%)

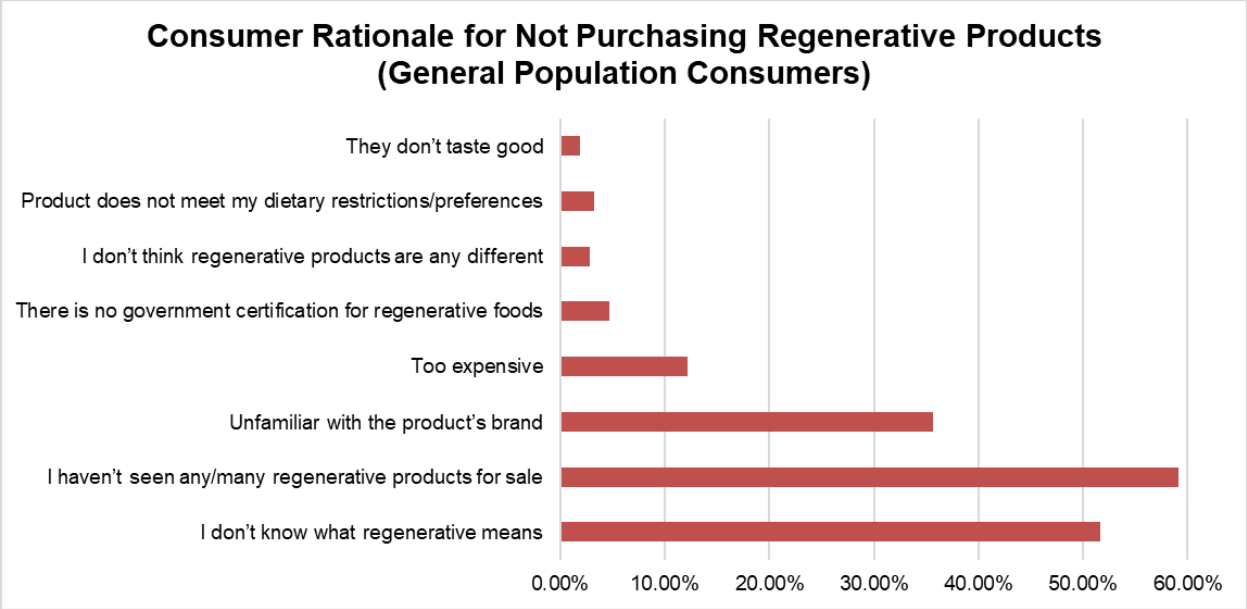

% of Time Consumers Purchase Organic (Sprouts)
Never (0%)
Rarely (1-25%)
Occasionally (26-49%)
Frequently (50-74%)
Regularly (75-100%)

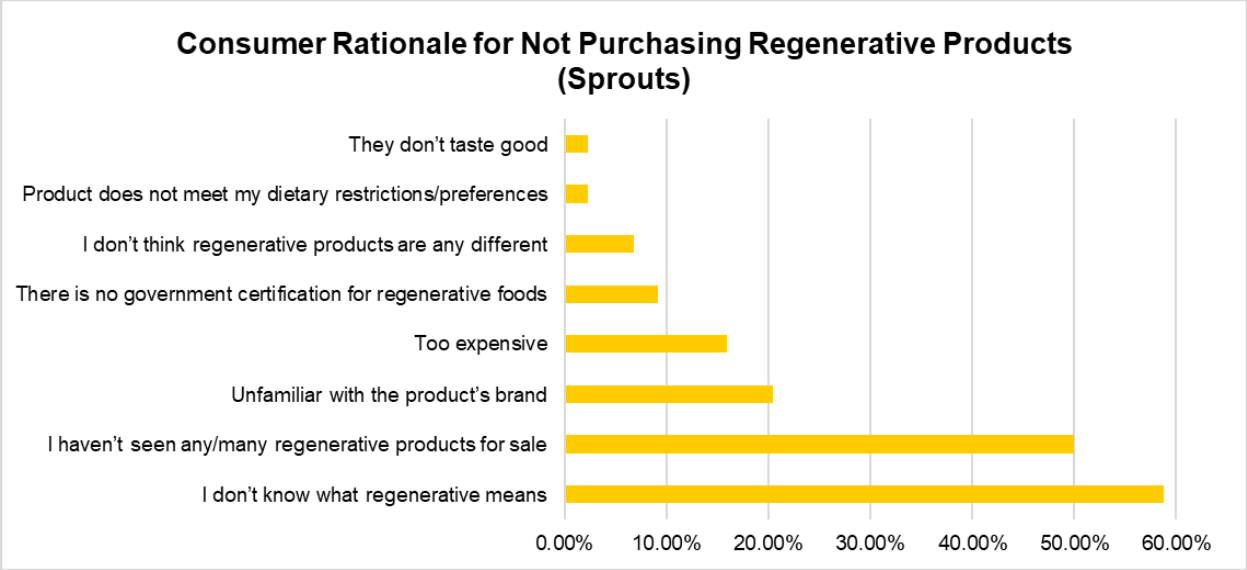
Question 11


Consumer Rationale for Not Purchasing Organic Products (General Population Consumers)
They don't taste good
I haven't seen any/many organic products for sale
Product does not meet my dietary restrictions/preferences
Unfamiliar with the product's brand
I don't know what organic means
I don't think organic products are any different
Too expensive
0.00%
20.00%
40.00%
60.00%
80.00%

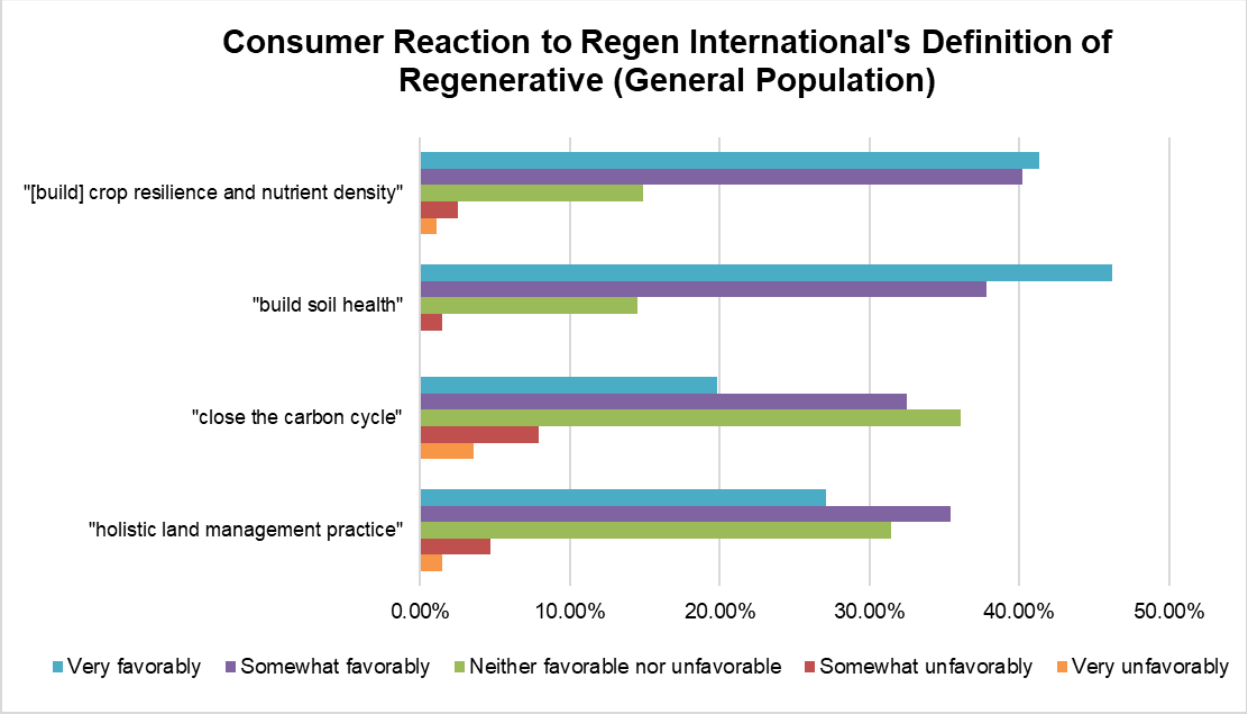

Consumer Rationale for Not Purchasing Organic Products (Sprouts Consumers)
They don't taste good
I haven't seen any/many organic products for sale
Product does not meet my dietary restrictions/preferences
Unfamiliar with the product's brand
I don't know what organic means
I don't think organic products are any different
Too expensive
0%
20%
40%
60%
80%
100%

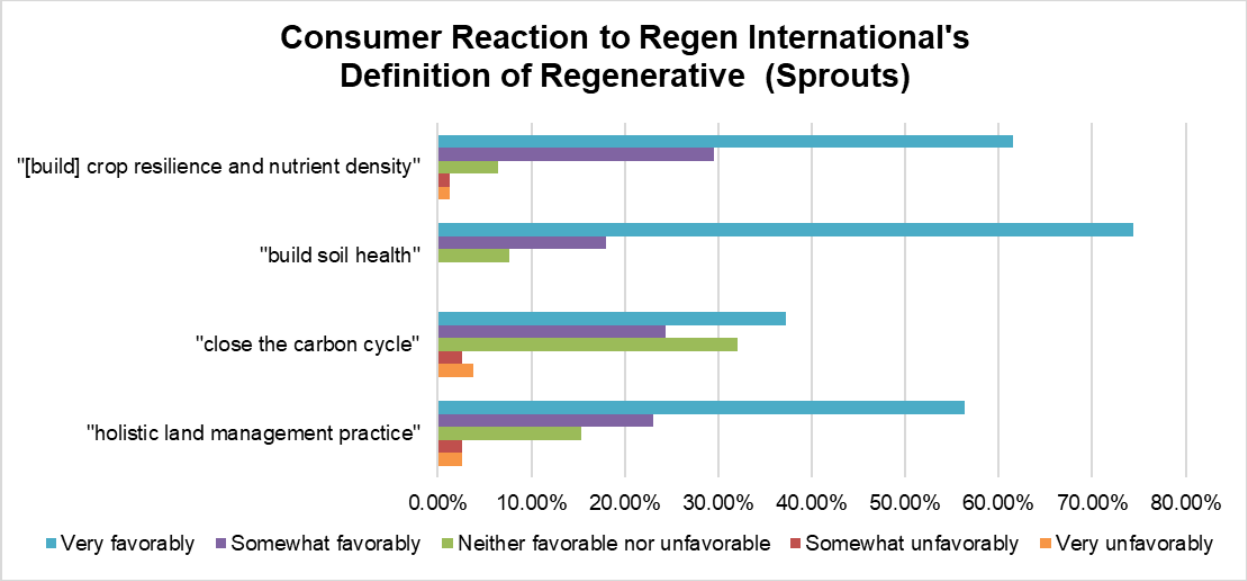
Question 12


Consumer Rationale for Not Purchasing Regenerative Products (General Population Consumers)
They don't taste good
Product does not meet my dietary restrictions/preferences
I don't think regenerative products are any different
There is no government certification for regenerative foods
Too expensive
Unfamiliar with the product's brand
I haven't seen any/many regenerative products for sale
I don't know what regenerative means
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
60.00%

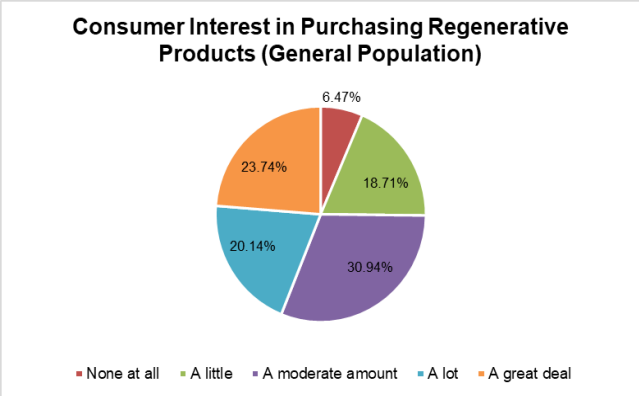

Consumer Rationale for Not Purchasing Regenerative Products (Sprouts)
They don't taste good
Product does not meet my dietary restrictions/preferences
I don't think regenerative products are any different
There is no government certification for regenerative foods
Too expensive
Unfamiliar with the product's brand
I haven't seen any/many regenerative products for sale
I don't know what regenerative means
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
60.00%

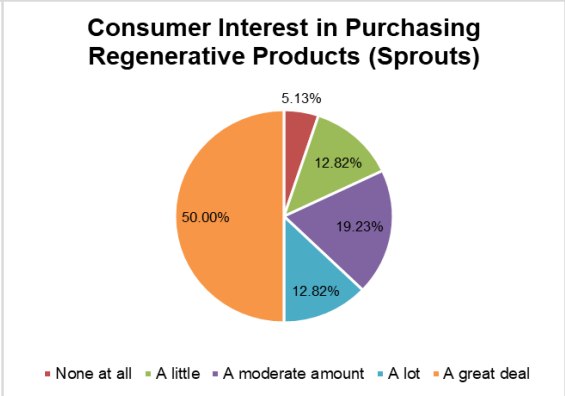
Question 13


Consumer Reaction to Regen International's Definition of Regenerative (General Population)
"[build] crop resilience and nutrient density"
"build soil health"
"close the carbon cycle"
"holistic land management practice"
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
Very favorably
Somewhat favorably
Neither favorable nor unfavorable
Somewhat unfavorably
Very unfavorably

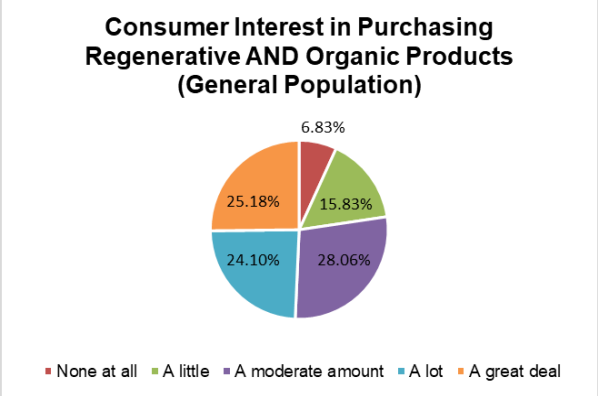


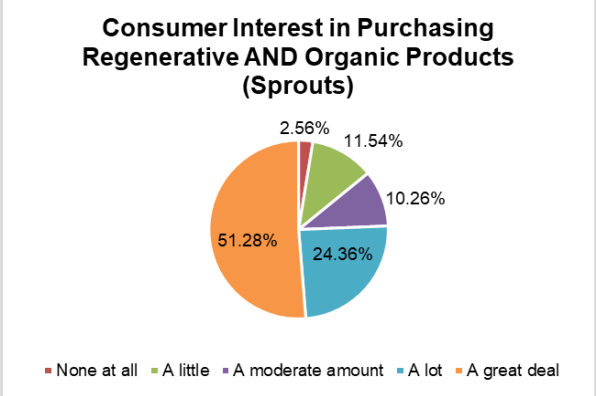
Question 14



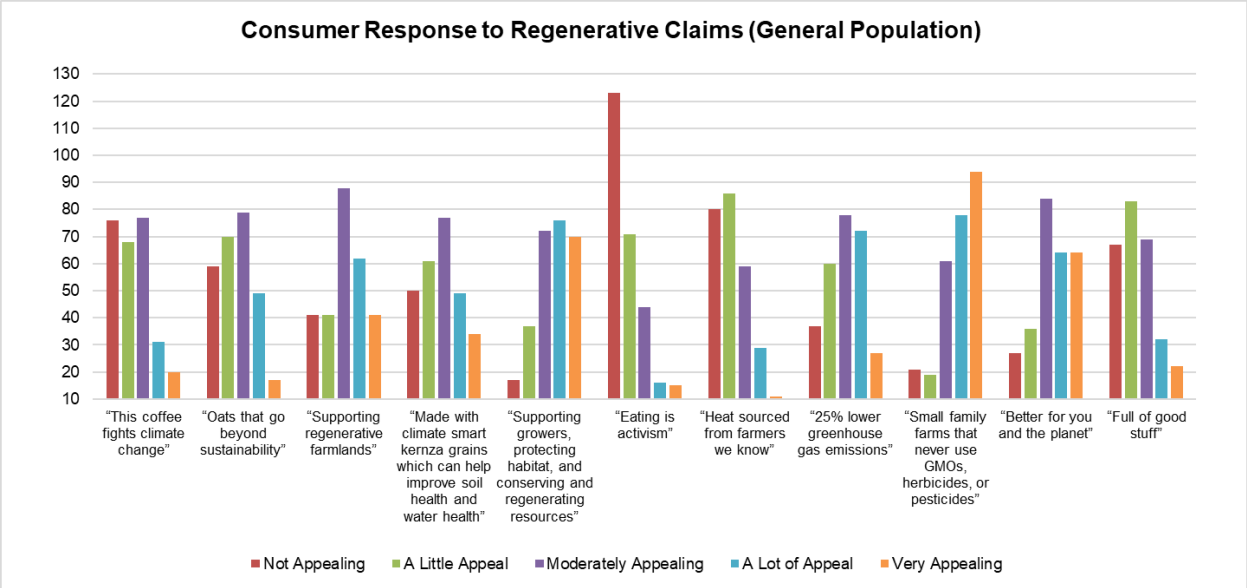


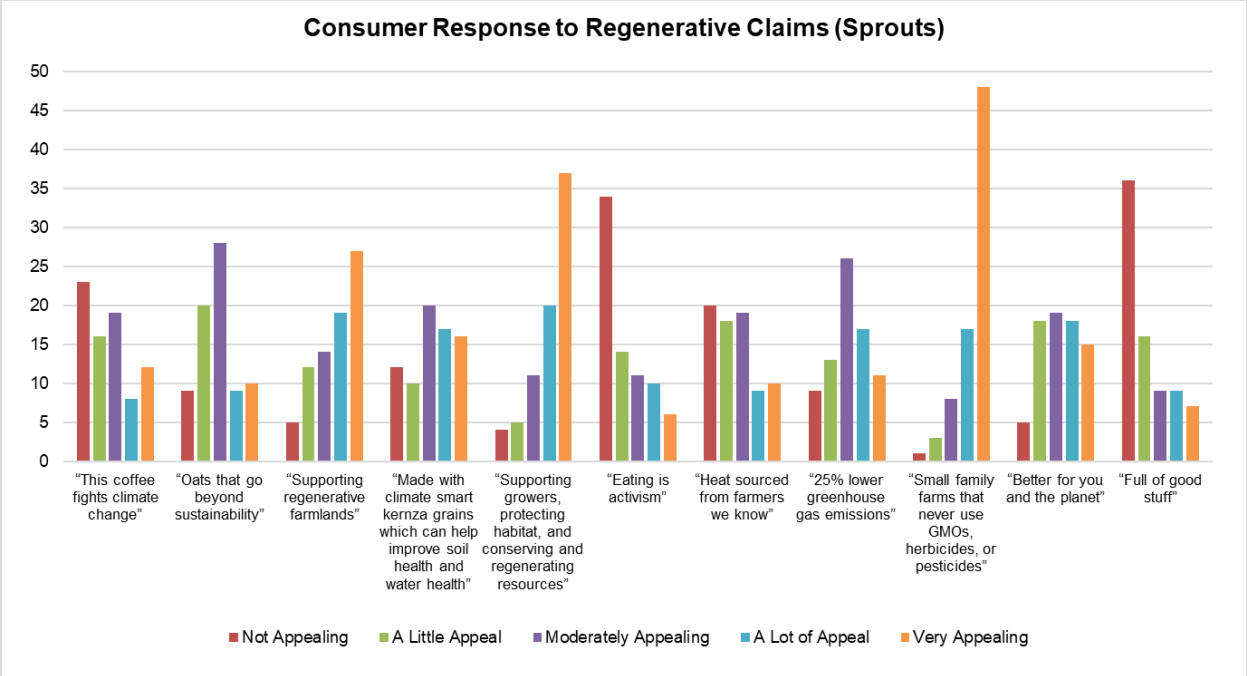
Question 15



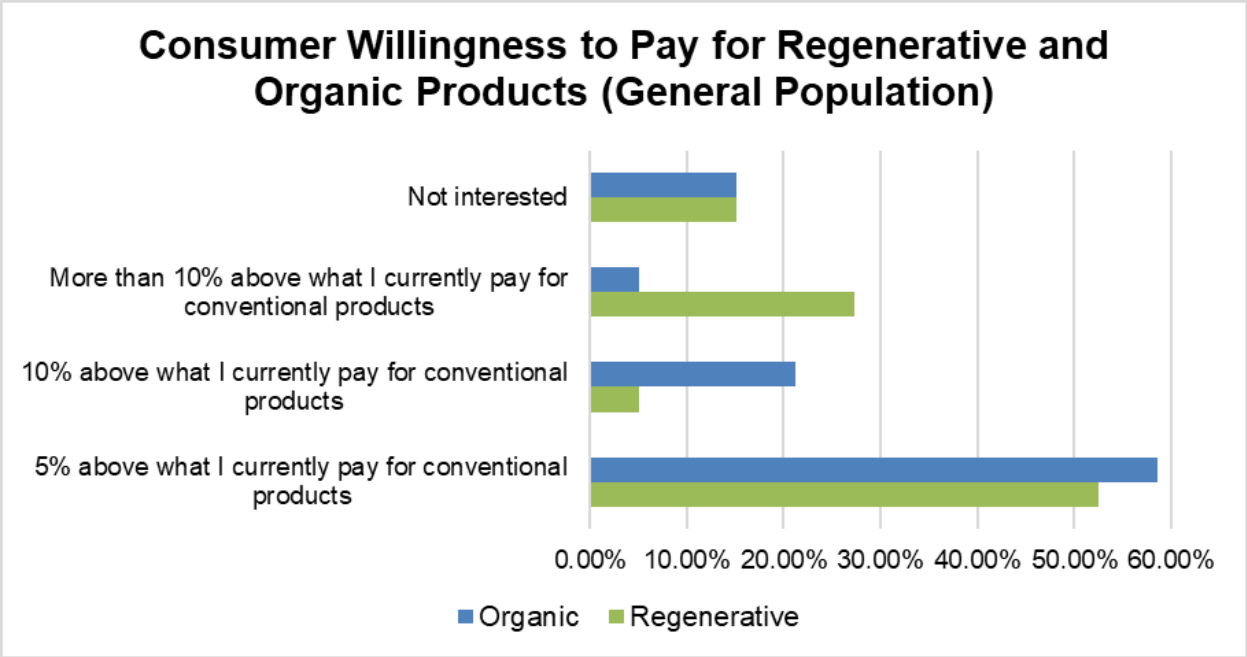


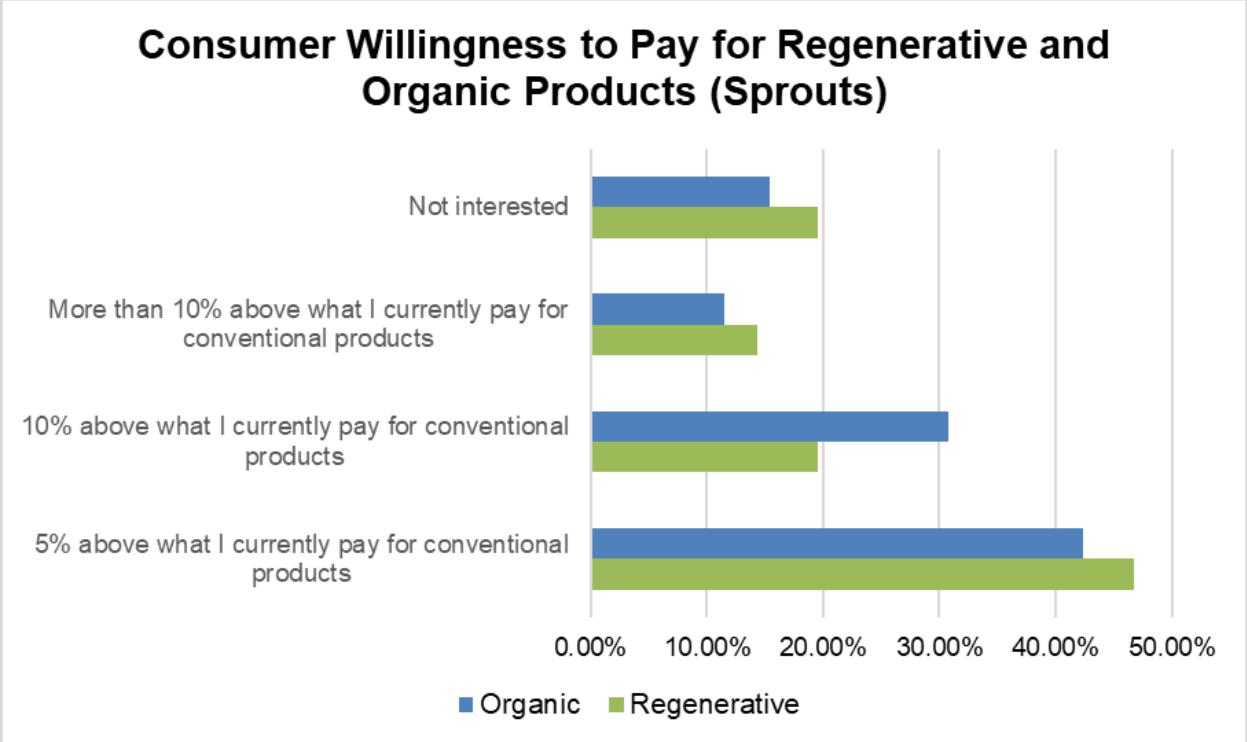
Question 16


Consumer Response to Regenerative Claims (General Population)
130
120
110
100
90
80
70
60
50
40
30
20
10
"This coffee fights climate change"
"Oats that go beyond sustainability"
"Supporting regenerative farmlands"
"Made with climate smart kernza grains which can help improve soil health and water health"
"Supporting growers, protecting habitat, and conserving and regenerating resources"
"Eating is activism"
"Heat sourced from farmers we know"
"25% lower greenhouse gas emissions"
"Small family farms that never use GMOs, herbicides, or pesticides"
"Better for you and the planet"
"Full of good stuff"
Not Appealing
A Little Appeal
Moderately Appealing
A Lot of Appeal
Very Appealing

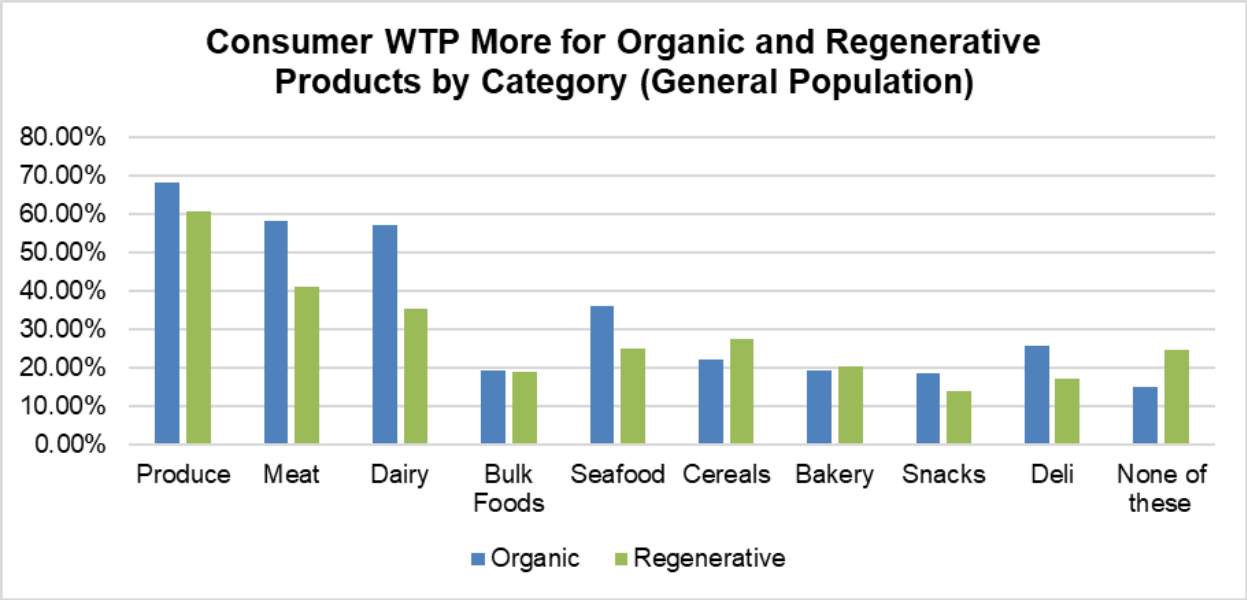

Consumer Response to Regenerative Claims (Sprouts)
50
45
40
35
30
25
20
15
10
5
0
"This coffee fights climate change"
"Oats that go beyond sustainability"
"Supporting regenerative farmlands"
"Made with climate smart kernza grains which can help improve soil health and water health"
"Supporting growers, protecting habitat, and conserving and regenerating resources"
"Eating is activism"
"Heat sourced from farmers we know"
"25% lower greenhouse gas emissions"
"Small family farms that never use GMOs, herbicides, or pesticides"
"Better for you and the planet"
"Full of good stuff"
Not Appealing
A Little Appeal
Moderately Appealing
A Lot of Appeal
Very Appealing

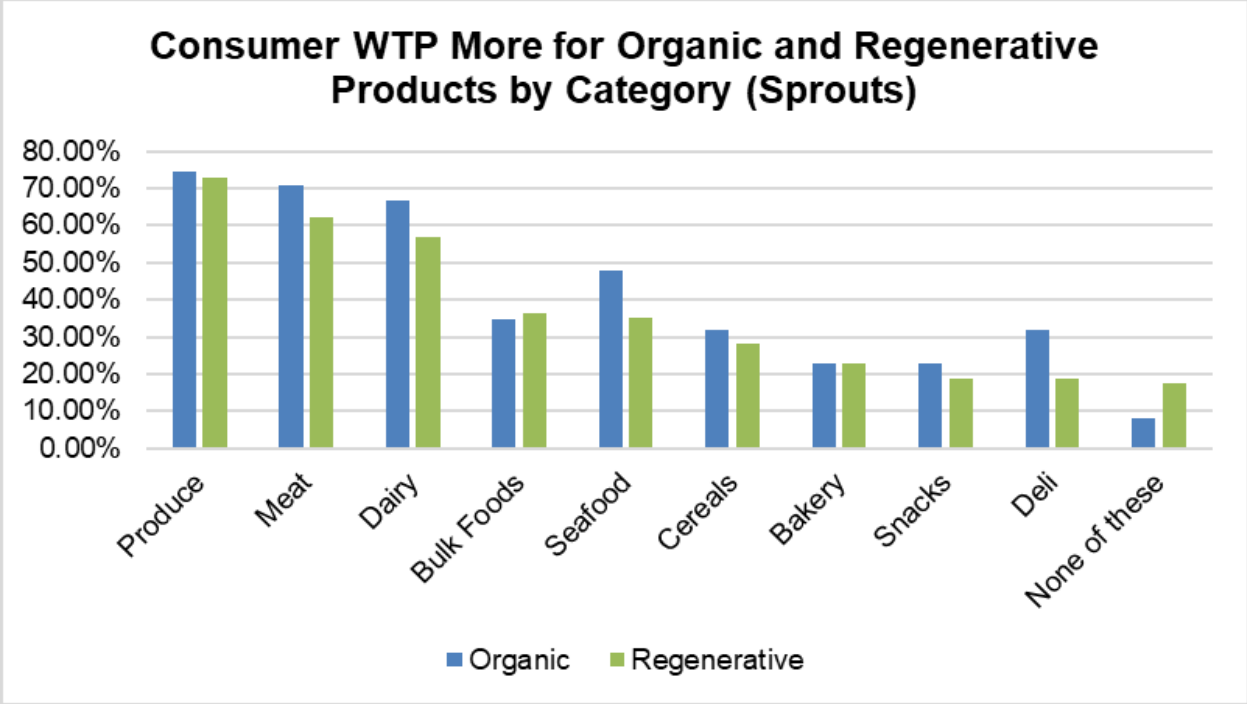
Question 17 and Question 19





Question 18 and Question 20





Appendix F: Qualitative Survey Results

Question 9

In a phrase, series of phrases, or sentence, how would you define regenerative foods? (General Population)
Fake
Food that can regorwn after haverting.
I usually assume something to help with climate change
Foods grown through specific agricultural practices that are good.
Sustainable food products
Resilient foods
Foods that are substantially grown with environment in focus
Food grown in a way that ensures the soil remains healthy or improves soil health
All natural, organic
Foods grown in a lab or through alternative means, plant-based, etc.
The regenerative diet is based on nutrient-dense whole foods, such as fruits, vegetables, whole grains, legumes, nuts, and seeds
Foods produced using modern agriculture techniques
Foods that can be regenerated

The growing of crops on soil where other crops have already been harvested
Regenerative food production makes harvests more reliable and resilient in the long term, by enhancing the health of soils, ecosystems and species on which we rely.
Ok
Growing food in a way that benefits the environment
Foods that do not deplete the ecosystems they are produced in. Often part of a circular ecosystem and produced using natural methods (no chemicals, etc)
These are foods that helps the proper growth ofthe body and are sustainable
Ways of farming and raising food that are eco friendly and sustainable for the soil
Reginat8ge foods are foods that are healthier anf help the planet
They are more healthy
I would need to research the term
Don’t know much about that to be honest
Foods grown in a way that does not harm the environment
Regenerative food is food produced using regenerative agriculture practices that aim to improve soil health, increase biodiversity, reduce carbon emissions, and increase nutritional values.
Naturally hand processed no chemicals or lab grown

Regenerative foods are agricultural products and practices that aim to restore and enhance ecosystems, soil health, and biodiversity, while also supporting local communities and sustainable food systems.
Not sure
Food that restores the health of the environment through its production process
Healthy soil
Extremely unhealthy
Foods that are able to grow without many chemucas
I think it is foods with vitamins
Regenerative foods are whole, natural foods without hormones or pesticides
Environmentally friendly food that cares about the land.
They are made again from their own energy
Regenerative foods are those that are generated from existing foods
Foods that can be regrown and are sustainable
They are finished foods
Organic foods that are better for you
A focus on maintaining the health of the environment on farms so that they are more resilient for future food growing

Foods that helps the environment rather than damage the environment.
Regenerative foods is defined to me as food that has been modified or regenerated from its original structure, meaning that it has been manipulated from its natural form.
Made in a lab
I am not sure here, I am only slightly familiar, this is new to me.
Nutritious
Foods that have seeds or starts that another plant can grow from
Foods that are easily produced
Gives nutrients back to soil
Foods that are produced more naturally
Sustainable and less damaging to the soil.
GMO
Enhances the soil
Fresh fruits or vegetables
Food that is made from something that is not natural
Regenerative foods are sustainably produced items that promote soil health, biodiversity, and ecosystem resilience.

I would describe regenerative foods as foods that are sustainably grown and enrich the environments they are grown
Im Unsure
They're okay
Farming practices that are mindful of how the food they grow affects the ecosystem
Food that is sustainably produced.
Foods that are rich in nutrients and vitamins.
Food that is grown with a focus on improving the planet. This is done by using fewer pesticides and less water, for example.
Foods grown from recycled farming means, such as composted plant matter, and such?
Foods that are grown more organically and healthy
Regenerative food is food produced using farming practices that aim to restore and imorove soil fertility and ecsysytem services.
It is an approach in agriculture that actively restores nature, like the health of the soil.
Regenerative foods are those produced through regenerative agricultural practices, which aim to restore and enhance the health and biodiversity of ecosystems.
Foods that are produced using a system that improves soil conditions and conserves water
Foods that help with the soil.

Regenerative food are those that are grown or produced using practices that aim to improve the health of the soil,water, and ecosystems.
Alternative to organic
I would describe them as healthy
Foods that don't tax the environment greatly and put an equal amount of energy into the land as they take out. Sometimes it has to do with the practices revolving around the farming sometimes it has to do with what crops you plant and when you plant them.
Foods that are not in their natural state
Foods that production is regenerative which means can reproduce itself.
Foods that are made from non-meat products
Foods that are replicated based on genetic data
To use the soil over and over
Regenerative foods seem to be grown or produced with soil and water that has been recycled or can be recycled, or produced in a way that doesn't harm the environment.
Foods that can be grown again
Good healthy food . Responsible
Foods that have been grown using practices that heal the earth and protect the soil's health using a combination of water conservation, animal husbandry, and natural ways of tending the crops.
They do not require the organism to die when harvested.

Foods that helps the soil
I would think they are produced with organic, natural methods to preserve soil and environmental health
Food that takes us beyond sustainability
I think (and I could be wrong) it's like Genetically Modified Organisms and lab grown meat
Foods that are easy to grow
Foods that are produced in environments that can regenerate themselves throughout the growing process.
Improving the ground conditions where our foods are grown
Better for the environment
I am actually unable to define it.
Food made unnaturally made with synthetic ingredients
Foods grown for soil use
Regenerative foods ultimately help the planet in the way they're grown and distributed
Food that is grown in laboratories.
Stabilizing the Earth’s climate by growing organic produce.
I would describe regenerative foods as natural grown foods from vegetables such the impossible burgers

Grown in a rotation to allow soil to recover
Reduction of carbon footprint.
Foods planted to suit the environment.
Food that I can put in the refrigerator or freeze to use again.
Working with the land with livestock and plants
It's my understanding that something is regenerative if many come from the same source,such as one plant or tree being the source,so once the plant or tree is harvested it will produce again to be harvested from the same plant or tree again.
A food that promotes growth of some body structure; e.g. Cell growth, bone growth.
Regenerative foods are grown using farming methods that improve soil health and the environment.
Regenerative foods are foods that are grown to be as healthy as possible for humans and also to help prevent climate change such as organic foods and using crop rotations.
Growing the food contributes to sustainability and future product growth.
Foods made with partially or fully lab-grown or enhanced properties.
They try and improve soil health
Im not 100% sure exactly what it means . I think it means grown in a confined area not the natural grown dirt grown. Some form of AI involved.
Regenerative foods are produced through regenerative agriculture practices, which aim to restore and enhance the health of ecosystems, particularly soil health

Food the can be regrown from seed?
Foods that are grown in a sustainable manner, particularly in terms of water use and 'green' fertilization.
Foods produced with a minimum of new sources and energies
Foods that are generally grown with the right process
I am not sure, I don’t know
Food that is not grow naturally
Foods that are good for you.
Farming food that is sustainable without exploiting food systems
Meet the highest standard for soil, health. Animal welfare & farmworker fairness.
Rehabelatation and conservation way of farming system, alternative to modern industrial farming.
It’s secondary like not natural at all
They are grown using regenerative agriculture practices
Genetically modified organisms
Foods that can be planted and sustainably grown
Foods that are grown or produced by sustainable, long-lasting means that make the soil rich.

A movement to grow healthier foods and better care for the latnd
I'd describe it as a modern version of what old-timey farmers knew and did such as crop rotation.

In a phrase, series of phrases, or sentence, how would you define regenerative foods? (Sprouts)
The practice of treating the soil with natural practices such as water management, crop rotation, no tillage, and natural fertilizer and compost to build a rich ecosystem to produce high food.
Sustainably grown
Enhanced strength of the ecosystem
Food that is part of the entire cycle of the earth. We use animals, soil, plants, to regenerate each other and ourselves. Good stewards of the land. No pesticides, herbicides, vaccines and other yuckies are used. Natural approach that considers a full cycle of life
Making farms more resilient to climate change, making produce more reliable
Respectful of Mother Earth
Doesn’t deplete resources in its production, perhaps adds to soil nutrients, water quality.
Foods that are consciously derived to enhance or improve overall health and environment
Food that is grown in a way that combines sustainability of the environment in which it is grown and the agricultural producer

Products that take into consideration the Heath of the soil
Regenerative foods are grown or raised in a way that gives back to the soil rather than depleting it and in doing so, creates healthier food and environments
Regenerative systems utilize resources in ways that allow the Earth to regenerate. I am vegan, in part, because animal agriculture is both cruel and non-regenerative.
Type of farming practice that give nutrients back to the soil so the crops nutritional value is higher and it is more sustainable for the farm/land
Positive impact on planet, the people and the food they produce
Reducing water waste and better use of farm lands
Non-GMO
Relates to regenerating the soil quality to produce quality crops.
Where food is produced sustainably and one season of producing helps with the next season of production and does not exhaust the resources needed to make the food.
Healthy for you and the planet
They self-reproduce.
It's foods grown in a manner that overall support the ecosystem by helping to rebuild the soil and retain water better. This helps reversing the flow of greenhouse gas emissions.
Helps the soil, air, etc Doesn't make things worse
Sustainable

Nonsense
Farming processes center sustainability from soil to "table"
Foods grown in ways that protect/ improve the land used to grow them so that they can be used to continue growing food
Assumed that practices are greener/give back to the soil/earth
Farming practices that focus on soil health, thus the food grown will also be healthier for consumers as well as for the environment
Grown in a way that maintains the efficacy of the farmland
Sustainably healthy
Foods that help the wellbeing of people and the planet as a whole
Growing food in harmony with natural environment
Sustainable
Foods grown with agricultural methods that replenish the soil and ecosystem rather than deplete it.
Farming and goods in soil that supports the carbon and nutrients
Foods that are raised on farms that have organic means of replenishing the soil (crop rotation, animal grazing and rotation, balance of pollinators and other natural processes instead of chemicals)
Grown naturally/organically, healthy soil and land

Foods that leave the environment they were grown in more restored then at the time they were grown
Using the earths natural resources
Foods that are grown within a practice of restoring nutrients to the food and soil
Foods that are grown in away that replenishes the soil with nutrients that will grow the next crops, you know REGENERATE the soil
An approach to farming that, allows the land, and natural assets to regenerate themselves, instead of conventional approaches to farming that can deplete these natural resources
Foods raised or grown in a manner that is better for the environment, workers animals, or nutrition of the products
Food grown that replenishes the soil organically without chemicals
Foods that came from soil that had optimum soil conditions.
Allowing the natural life cycles to work as they were intended by our Creator. Microbes feed plants which feed the animals which spread urine and feces to microbes which feeds the plants which feed the animals.

References

Alexandre Family Farm. (n.d). *Regenerative farming*. https://alexandrefamilyfarm.com/pages/regenerative

Alvarez, L. (n.d). *Colonization, Food, and the Practice of Eating*. Food Empowerment Project. https://foodispower.org/our-food-choices/colonization-food-and-the-practice-of-eating/

American Farm Bureau Federation. (n.d). *Fast Facts about Agriculture & Food*. https://www.fb.org/newsroom/fast-facts

Anto, J. M. (2024, February 29). Human Health and the Health of Planet Earth Go Together. *Journal of Internal Medicine 295*(5), 695-706. https://onlinelibrary.wiley.com/doi/full/10.1111/joim.13774

ArcGIS Maps. (n.d). *Invasion of America*. https://usg.maps.arcgis.com/apps/webappviewer/index.html?id=eb6ca76e008543a89349ff2517db47e6

Barclay, A. (2023, September 12). *Till or no-till farming: Opening up the debate*. Climate Farmers. https://www.climatefarmers.org/blog/till-or-no-till-farming-opening-up-the-debate/

Bless, A., Davila, F., & Plant, R. (2023, May 1). A Genealogy of Sustainable Agriculture Narratives: Implications for the Transformative Potential of Regenerative Agriculture - Agriculture and Human Values. *Agriculture and Human Values 40, 1379–1397.* https://link.springer.com/article/10.1007/s10460-023-10444-4

Brown, G. (2021, August 2). *The Ugly Fight Between Organic and Regenerative Farming*. Cairncrest Farm. https://cairncrestfarm.com/blogs/blog/the-ugly-fight-between-organic-and-regenerative-farming

Climate Collaborative. (2024). *Regenerative Agriculture Certscape*. https://assets.nationbuilder.com/climatecollaborative/pages/2165/attachments/original/1706211214/Regen_Ag_Certscape_1.4.pdf?1706211214

Congressional Research Service. (2017). Understanding Process Labels and Certification for Foods, 1-3. https://crsreports.congres.gov/product/pdf/IF/IF10650

Cusworth, G., & Garnett, T. (2023, June). *What is Regenerative Agriculture?*. Table Explainer. https://www.tabledebates.org/sites/default/files/2023-06/What is regenerative agriculture_TABLE Explainer_2023.pdf

Davis, D. R., & Epp, M. D. (2013, Jun 18). Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999. *Journal of the American College of Nutrition 23*(6), 669-682. https://www.tandfonline.com/doi/abs/10.1080/07315724.2004.10719409

Department of Primary Industries and Regional Development. (2022, October 11). *Soil Organic Matter Influence on Nutrient Availability*. Government of Western Australia https://www.agric.wa.gov.au/measuring-and-assessing-soils/soil-organic-matter-influence-nutrient-availability

eHistory. "Invasion of America" [Web Map]. https://usg.maps.arcgis.com/apps/webappviewer/index.html?id=eb6ca76e008543a89349ff2517db47e6

Fiolhais, M. (2023, August 9). *The Indigenous Roots of Regenerative Agriculture*. Rainforest Alliance. https://www.rainforest-alliance.org/insights/the-indigenous-roots-of-regenerative-agriculture/

Food and Agriculture Organization. (n.d). *Sustainable Development Goals.* https://www.fao.org/wasag/overview/background/the-sdgs-and-the-paris-agreement/en/

Food and Agriculture Organization. (2015-a). *Soils-2015*. https://www.fao.org/soils-2015/en/

Food and Agriculture Organization. (2015-b). *Status of the World's Soil Resources: Main Report- FAO.* https://openknowledge.fao.org/bitstreams/6ec24d75-19bd-4f1f-b1c5-5becf50d0871/download

Frankel-Goldwater, L., Wojtynia, N., & Dueñas-Ocampo, S. (2024, January 7). Healthy People, Soils, and Ecosystems: Uncovering Primary Drivers in the Adoption of Regenerative Agriculture by US Farmers and Ranchers. *Frontiers in Sustainable Food Systems 7.* https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2023.1070518/full

Frolik, E. (1977). *The History of Agriculture in the United States Beginning With the Seventh Century*. Digital Commons@University of Nebraska-Lincoln. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1456&context=tnas

Giller, K. E., Hijbeek, R., Andersson, J. A., & Sumberg, J. (2021, March 2). Regenerative Agriculture: An Agronomic Perspective. *Outlook on Agriculture 50*(1). https://journals.sagepub.com/doi/10.1177/0030727021998063

Golan, E., Kuhler, F., Mitchell, L., Greene, C., & Jessup, A. (2000). *Economics of Food Labeling*. U.S. Department of Agriculture. https://www.ers.usda.gov/webdocs/publications/41203/18885_aer793.pdf?v=0

Goodwin, J. (n.d). *Regenerative agriculture: Past, Present and Future*. Noble Research Institute. https://www.noble.org/regenerative-agriculture/regenerative-agriculture-past-present-and-future/

Greg, F., & Vita, L. (n.d). *3 Major Factors Affecting Access to Nutrient Dense Foods*. Farmer's Footprint. https://farmersfootprint.us/nutrient-density/

Guardian News and Media. (2023, September 9). *Regenerative agriculture is the new farming buzzword, but few can agree on what it means*. The Guardian. https://www.theguardian.com/australia-news/2023/sep/10/regenerative-agriculture-is-the-new-farming-buzzword-but-few-can-agree-on-what-it-means

Hale, G. (2023, September 12). *The Importance of the Food Industry for Climate Change*. Econofact. https://econofact.org/the-importance-of-the-food-industry-for-climate-change

Hamilton, I., Kennard, H., McGushin, A., Hoglund-Isaksson, L., Kiesewetter, G., & Lott, M. (2021, February). The Public Health Implications of the Paris Agreement: A Modeling Study. *The Lancet Planetary Health 5*(2). https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30249-7/fulltext

Hickely, H. (2022, February 24). *Farms Following Soil-friendly Practices Grow Healthier Food, Study Suggests*. UW News. https://www.washington.edu/news/2022/02/24/farms-following-soil-friendly-practices-grow-healthier-food-study-suggests/#:~:text=%E2%80%9CWe%20couldn't%20find%20studies,we%20wished%20was%20out%20there.%E2%80%9D

IPCC Intergovernmental Panel on Climate Change. (n.d). *Climate change 2022: Impacts, Adaptation and Vulnerability*. https://www.ipcc.ch/report/ar6/wg2/

Jordon, M. W., Willis, K. J., Bürkner, P.-C., Haddaway, N. R., Smith, P., & Petrokofsky, G. (2022, August 17). Temperate Regenerative Agriculture Practices Increase

Soil Carbon but Not Soil Crop Yield- a meta-analysis. *Environmental Research Letters 17*(9). https://iopscience.iop.org/article/10.1088/1748-9326/ac8609

John Hopkins Center for a Livable Future. (n.d). *Center for a Livable Future.* https://clf.jhsph.edu/

Kiss the Ground. (n.d-a). *Guide to regenerative agriculture (why is it important?)*. https://kisstheground.com/education/resources/regenerative-agriculture

Kiss the Ground. (n.d-b). *Regenerative Certifications & Verifications*. https://kisstheground.com/education/resources/regenerative-certifications

Khangura, R., Ferris, D., Wagg, C., & Bowyer, J. (2023, January 27). Regenerative Agriculture- A Literature Review on the Practices and Mechanisms Used to Improve Soil Health. *Sustainability 2023, 15*(3), 2338. https://www.mdpi.com/2071-1050/15/3/2338

Kolodinsky, J. (2012, April 26). Persistence of Health Labeling Information Asymmetry in the United States: Historical perspectives and twenty-first century realities. *Journal of Macromarketing 23*(2). https://journals.sagepub.com/doi/10.1177/0276146711434829

Ladenheim, A., & Little, J. (2024, January 8). *Viewpoint: Without Measurable Metrics, "Regenerative Agriculture" is Often Little More Than a Data-Less Claim and a Form of Greenwashing. Here's How to Make it More Science Based and Sustainable*. Genetic Literacy Project. https://geneticliteracyproject.org/2024/01/08/viewpoint-without-measurable-metrics-regenerative-agriculture-is-often-little-more-than-a-data-less-claim-and-a-form-of-greenwashing-heres-how-to-make-it-more-science-bas/

Lal, Rattan. (2010, October). *The Five Interconnected Global Carbon Pools.* Research Gate. https://www.researchgate.net/figure/The-five-interconnected-global-carbon-pools-contain-a-total-of-50-400-billion-metric-tons_fig1_232673657

Lal, Ratton. (2004, November). Soil Carbon Sequestration to Mitigate Climate Change. *BioScience 60*(9), 708-721. https://www.sciencedirect.com/science/article/abs/pii/S0016706104000266

Li, H., & Lin, W. (2023, October 9). Would Altruistic Consumers Place a Higher Value on Sustainable Foods? *Foods 2023, 12*(19), 3701. https://www.mdpi.com/2304-8158/12/19/3701

Marano, M., & Farley, S. (2022, October 27). *Four Steps to Transitioning to Regenerative Agriculture*. The Rockefeller Foundation. https://www.rockefellerfoundation.org/insights/perspective/four-steps-to-transitioning-to-regenerative-agriculture/

Messer, K. D., Costanigro, M., & Kaiser, H. M. (2017, September). Labeling Food Processes: The Good, the Bad and the Ugly. *Applied Economic Perspectives and Policy 39*(3), 407-427. https://www.jstor.org/stable/48546188

Montgomery, D. R., & Biklé, A. (2021, November 3). Soil Health and Nutrient Density: Beyond Organic vs. Conventional Farming. *Frontiers in Sustainable Food Systems 5.* https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2021.699147/full

Mosaic Crop Nutrition. (n.d). *Carbon Storage & Benefit*. https://www.cropnutrition.com/resource-library/carbon-storage-benefit/

Natural Products Expo West 2024. (2024). *Exhibitor directory*. https://expowest24.smallworldlabs.com/exhibitors

Newton, P., Civita, N., Frankel-Goldwater, L., Bartel, K., & Johns, C. (2020, October 25). What is Regenerative Agriculture? A Review of Scholar and practitioner definitions based on processes and outcomes. *Frontiers in Sustainable Food Systems 4.* https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2020.577723/full

NRDC. (n.d). https://www.nrdc.org/

Nutrient Density Alliance. *(2024). Engaging Consumers on Regenerative Agriculture: How Brands Can Integrate Nutrient Density for Top-line Growth*. Nutrient Density Alliance. (n.d). https://www.nutrientdensityalliance.org/whitepaper

Nutrient Density Alliance. (n.d). *Be part of a movement championing the nutritional advantages of regenerative agriculture. https://www.nutrientdensityalliance.org/*

Offenheiser, R. (2020, April 3). *The Green Revolution: Norman Borlaug and the race to fight global hunger*. PBS. https://www.pbs.org/wgbh/americanexperience/features/green-revolution-norman-borlaug-race-to-fight-global-hunger/

Organic Voices. (2024). *White Paper: Concerns with Regenerative Agriculture Labels, Executive Summary*. Organic Voices. https://www.organicvoices.org/concerns-with-regenerative-agriculture-labels-executive-summary/

Painterland Sisters. (n.d). *About Us*. https://www.painterlandsisters.com/about

Patagonia Provisions. (n.d). *Shop Provisions Food Collections*. https://www.patagoniaprovisions.com/collections/all?gad_source=1&gclid=Cj0KCQjwq_G1BhCSARIsACc7NxqDxjbYrr8BYRvJipvtKN2v1KHLtAFdr00kIWAIun-Gqctn7BEU7XkaAmkGEALw_wcB&gclsrc=aw.ds

Patil, A. A. (2018). Impact of Climate Change on Soil Health a Review. *International Journal of Chemical Studies 6*(3): 2399-2404 https://www.researchgate.net/publication/328130295_Impact_of_climate_change_on_soil_health_A_review

Raworth, K. (2017, May). A Doughnut for the Anthropocene: Humanity's Compass in the 21st Century. *The Lancet Planetary Health 1*(2). https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(17)30028-1/fulltext

Real Organic Project. (n.d). *About Us*. https://realorganicproject.org/about-us/

Regenerative Farmers of America. (n.d). *No Till Farming: Benefits, Techniques, and Tips for Regenerative Agriculture*. https://www.regenerativefarmersofamerica.com/no-till

Regenerative Organic Alliance. (n.d). *Impact report 2022-2023*. https://regenorganic.org/wp-content/uploads/2023/03/Regenerative-Organic-Alliance-_-Impact-Report-2022-2023-1.pdf

Regenerative Organic Certified. (2020). *Processor Criteria*. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://regenorganic.org/wp-content/uploads/2020/10/ROC_Processor-Criteria.pdf?ref=ambrook#:~:text=To%20achieve%20Regenerative%20Organic%20Certified,National%20Organic%20Program%20(NOP)

Regenerative Organic Certified Alliance. (2020). *Discover Your Road to Regenerative Organic Certified*. https://regenorganic.org/get-started/

Reguzzoni, A. (2018, March 12). *What Does the New Regenerative Organic Certification Mean for the Future of Good Food?* Civil Eats. https://civileats.com/2018/03/12/what-does-the-new-regenerative-organic-certification-mean-for-the-future-of-good-food/

Rehberger, E., West, P. C., Spillane, C., & McKeown, P. C. (2023, May 31). *What Climate and Environment Benefits of Regenerative Agriculture Practices? An*

Evidence Review. Environmental Research Communications. https://iopscience.iop.org/article/10.1088/2515-7620/acd6dc

Rodale Institute. (2020, October 29). *Regenerative Organic Agriculture*. https://rodaleinstitute.org/why-organic/organic-basics/regenerative-organic-agriculture/

Rodale Institute. (2014). *Regenerative Organic Agriculture and Climate Change*. https://rodaleinstitute.org/wp-content/uploads/rodale-white-paper.pdf

Sackett, H., Shupp, R., & Tonsor, G. (2016, July). Differentiating “Sustainable” From “Organic” and “Local” Food Choices: Does Information About Certification Criteria Help Consumers? *International Journal of Food and Agriculture Economics 4*(3), 17-31. https://www.foodandagriculturejournal.com/vol4.no3.pp17.pdf

SAI Platform. (2024, June 24). *Sai Platform’s 2023 annual report*. https://saiplatform.org/our-work/news/sai-platforms-2023-annual-report/

Sands, B., Machado, M. R., White, A., Zent, E., & Gould, R. (2023, May 4). *Moving Towards An Anti-colonial Definition for Regenerative Agriculture - Agriculture and Human Values*. SpringerLink. https://link.springer.com/article/10.1007/s10460-023-10429-3

SARE. (2022, December 2). *The National Organic Program*. https://www.sare.org/publications/transitioning-to-organic-production/the-national-organic-program/

Scientific American. (2011, April 27). *Dirt poor: Have Fruits and Vegetables Become Less Nutritious?*. Scientific American. https://www.scientificamerican.com/article/soil-depletion-and-nutrition-loss/

Shahbandeh, M. (2023, July 26). *Consumer Preferences When Purchasing Meat U.S. 2022*. Statista. https://www.statista.com/statistics/1008811/us-consumer-beef-type-preference/

Sharma, A., & Bryant, L. (2022, April 21). *NRDC report: Pathways to Regenerative Agriculture*. Be a Force for the Future. https://www.nrdc.org/bio/arohi-sharma/nrdc-report-pathways-regenerative-agriculture

Soil Regen. (n.d). *Regenerative Verified, Regeneratively Grown*. https://www.agsoilregen.com/regenerativeverified

Soul Fire Farm. (n.d). *Farming practices*. https://www.soulfirefarm.org/theland/farmingpractices/

SPINS. (2023, March 14). *Spins Product Intelligence Spotlight: Regenerative Organic Certification*. https://www.spins.com/resources/blog/spins-product-intelligence-spotlight-regenerative-organic-certification/

Sustainable Agriculture Network. (n.d). *Our Mission and Strategy*. https://www.sustainableagriculture.eco/our-mission

TechTarget. (2024, July 17). *Usual Weekly Earnings of Wage and Salary Workers Second Quarters 2024*. Bureau of Labor Statistics. https://www.techtarget.com/searchsecurity/answer/Adobe-Acrobat-Chrome-extension-What-are-the-risks

Thrive Market. (n.d). *Regenerative*. https://thrivemarket.com/social/regenerative-agriculture

Turner, A. (2022, November 28). *Understanding Food Insecurity Among Native American Communities*. Food for Others. https://foodforothers.org/understanding-food-insecurity-among-native-american-communities/

USDA Agricultural Marketing Service. (n.d). *Becoming a Certified Operation*. https://www.ams.usda.gov/services/organic-certification/becoming-certified

USDA ERS. (2023, March 3). *Farm labor*. https://www.ers.usda.gov/topics/farm-economy/farm-labor/#:~:text=Over%20this%20same%20period%2C%20average,workers%20has%20increased%20over%20time.

U.S. Department of the Interior. (2024, March 18). *Indigenous Fire Practices Shape our Land*. National Parks Service. https://www.nps.gov/subjects/fire/indigenous-fire-practices-shape-our-land.htm

United Nations. (n.d). *Transforming Our World: The 2030 Agenda for Sustainable Development.* Department of Economic and Social Affairs. https://sdgs.un.org/2030agenda

United Nations. (n.d). *What is the Paris Agreement?* United Nations Climate Change. https://unfccc.int/process-and-meetings/the-paris-agreement

U.S. Geological Survey. (n.d). *What is Carbon Sequestration?* https://www.usgs.gov/faqs/what-carbon-sequestration

Wilson, K. R., Myers, R. L., Hendrickson, M. K., & Heaton, E. A. (2022, November 17). Different Stakeholders' Conceptualizations and Perspectives of Regenerative Agriculture Reveals More Consensus than Discord. *Sustainability 2022, 14*(22), https://www.mdpi.com/2071-1050/14/22/15261

Wluka, G. (2023, November 14). *Growing Stronger: The Sustainable Roots of Indigenous Agriculture*. EESI. https://www.eesi.org/articles/view/the-sustainable-roots-of-indigenous-agriculture

Wozniacka, G. (2019-a, September 5). *With Regenerative Agriculture Booming, the Question of Pesticide Use Looms Large.* Civil Eats. https://civileats.com/2019/09/05/with-regenerative-agriculture-booming-the-question-of-pesticide-use-looms-large/

Wozniacka, G. (2019-b, October 29). *Big Food is Betting on Regenerative Agriculture to Thwart Climate Change*. Civil Eats. https://civileats.com/2019/10/29/big-food-is-betting-on-regenerative-agriculture-to-thwart-climate-change/

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Haley Burns is a Program Officer at Builders Initiative, leading the foundation's agriculture grantmaking. Prior to Builders Vision, Haley led similar work at the Walton Family Foundation. Haley has worked across the agriculture sector including: Environmental Initiative's Agriculture Program where she convened public, non-profit, and corporate agriculture leaders; Aramark where she managed sustainable food procurement and zero-waste packaging initiatives; KIPP Houston where she launched a food and garden education program; and Americorps FoodCorps. Haley studied Public Health at George Washington University and continues to think of her work in the context of human health and well-being. Haley is a 2023-2024 USDA NextGen Scholar, studying Food Policy and Sustainability Leadership at Arizona State University.

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Alissa is a Program Specialist with USAID's Bureau for Resilience, Environment and Food Security. Before joining USAID, Alissa was a FoodCorps Americorps service member focused on garden and nutrition education, food security, and community development surrounding the joy and power of food. She served in Van Buren, AR and Lowell, MA, where she provided extensive support with classroom and cafeteria engagement centering on community feedback and digital outreach campaigns. Prior to that, Alissa was a Management Analyst for the Naval Criminal Investigative Service, Office of Special Projects, where she provided administrative support managing personnel, travel, correspondence, and office maintenance. Alissa graduated from Edgewood College in Madison, WI, with a B.S. in Political Science: Global and Comparative Politics and a minor in Economics. Alissa is a Master's student and USDA NextGen Scholar, studying Sustainable Food Systems at Arizona State University.

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Megan is the Program Officer for Grantmaking Programs at the Community Foundation of Greater Greensboro where she manages the health and wellness and cultural vibrancy grantmaking portfolios as well as the Foundation's Teen Grantmaking Council. Originally from Tacoma, Washington, Megan discovered her love for food early in life. She graduated from Saint Martin's University with a Bachelor's in Political Science and Sociology/Cultural Anthropology. After graduating, Megan served a year with FoodCorps AmeriCorps at the Mayor's Office of Food Access (now Food Justice) in Boston, MA and then worked as the Volunteer Manager at a day shelter for adults experiencing homelessness in downtown Boston. Today, Megan lives in North Carolina, is a proud USDA NextGen Scholar and a Master's student studying Sustainable Food Systems at Arizona State University.

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Kali Ransom is a USDA NextGen Scholar studying Sustainability Leadership and Food Policy at Arizona State University. Her agricultural journey began with volunteering at community gardens in her hometown of Springfield, Massachusetts. This experience led to a five-year career in sustainable agriculture and eventually to roles in federal service and nonprofit work, focused on improving health outcomes for urban youth through nutrition and garden education. Kali has since collaborated with nonprofits, nutrition services departments, and agricultural trusts to enhance programs that promote health outcomes and equity initiatives. She currently runs a digital marketing consultancy agency specializing in the agriculture sector. In her free time, Kali serves as co-founder of Valley Housing Coop, a group equity housing cooperative dedicated to creating more affordable housing in Western Massachusetts, in partnership with regional land trusts.

Thailiya Thomas
Thailiya Thomas is a former FoodCorps School Nutrition Service Member (SNSM) at the Rio School District, and a current 2023-2025 USDA NextGen Scholar, studying Sustainability Leadership and Food Policy at Arizona State University. FoodCorps is a non-profit dedicated to providing every child with access to food education and nourishing school food. As an SNSM, Thailiya focused on district-wide projects that changed school cafeteria meals and culture. Her main tasks included procuring locally grown produce, developing culturally relevant menu options, coordinating and hosting educational family engagement events, and managing compost waste sorting systems across nine school cafeterias.

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