



**American
Sustainable
Business
Network**

The Business Case for Safer Alternatives to Fertilizers and Pesticides

By: Liza LaManna, Manager of Regenerative Agriculture and Clean Water, ASBN

with Support From Abby Maxwell, Senior Associate, ASBN

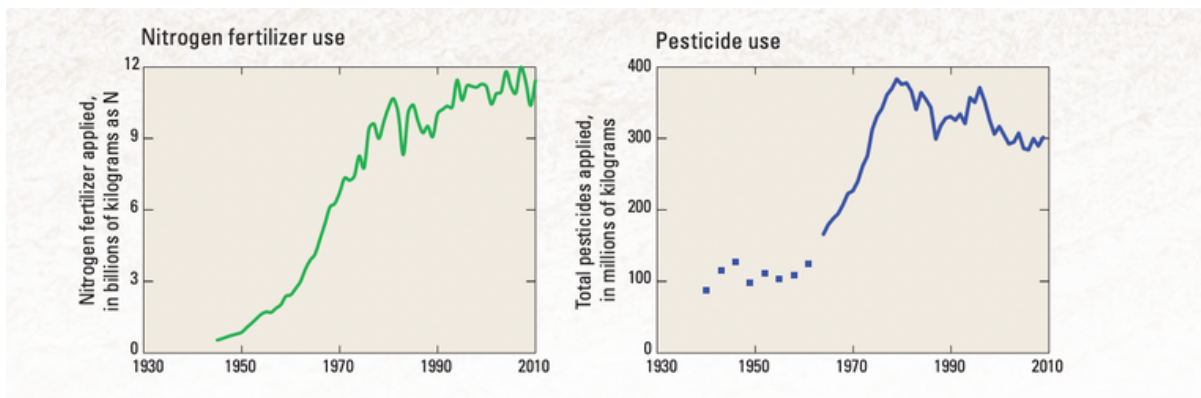
TABLE OF CONTENTS

I. Introduction	3
II. The Business Case for Safer Alternatives	4
1. The Financial Benefit	
2. Avoided Costs of Health Effects	
3. Reduced Operational Costs	
4. Consumer Demand	
III. Chemical Fertilizers	8
IV. Synthetic Pesticides	12
V. Policy Landscape	14
VI. Conclusion	18

I. Introduction

Chemical inputs such as pesticides and fertilizers have been proven to degrade watershed health, soil health, and even human health – posing a serious threat to the future of U.S. businesses, local economies, and public and environmental health in rural and urban communities alike. As agriculture has intensified over the last 100 years there has been a drastic increase in the use of chemicals, resulting in increased adverse effects on the environment, most notably on soil and water quality. [Figure 1](#) shows the drastic increase in usage of chemical inputs until 2010 that has not slowed and now is projected to exceed both charts.

Figure 1: Chemical Input Use Timeline



Source: United States Geological Survey

Researchers estimate that pesticide overuse costs Americans about \$10 billion annually, and the overuse of fertilizer costs \$157 billion annually in environmental and public health costs. Soil erosion, exacerbated by both of these, causes \$44 billion in annual externality costs to American businesses and families, while those who profit from these harmful contaminants continue to raise their prices and line their pockets at our expense.

Fortunately, the market offers alternatives to chemical-intensive farming, lawn, and turf care methods; these have proven to be not only more affordable, but also significantly better for the environment, businesses, and local communities. Building soil health through a combination of context and place-based practices has been shown to eliminate the need for chemical inputs, lowering costs and, in the case of some farms, boosting yields.

Businesses such as Branch Creek Organics and EarthKind Pest Control are demonstrating that there are market solutions that are positioned to aid in this transition, but because of inadequate funding at the national and state levels, lack of technical assistance expertise, and lack of access to federal programs by beginning and underserved farmers, the organic market demand continues to exceed supply. To reach the full potential of these alternatives, however, we must create a policy landscape that supports businesses' ability to embrace sustainable practices.

II. The Business Case for Safer Alternatives

There is a strong business case for supporting the transition away from chemical inputs such as pesticides and fertilizers:

1. The financial benefit of clean water and soil health on farms and beyond;
2. Avoided costs of health effects for families, communities, and workers;
3. Reduced operating costs; and
4. Consumer demand for safer and more ethical products.

1. The Financial Benefit of Clean Water and Soil Health on Farms and Beyond

According to the United Nations' projections, if the world continues our current agricultural practices, we have just 60 years of topsoil left. This accelerated depletion is primarily attributed to the use of fertilizers and pesticides, causing soil erosion at rates 10 to 100 times higher than natural replenishment. Without topsoil, vital soil functions become compromised, leading to reduced water retention, carbon absorption, and agricultural productivity. The U.S. agricultural sector suffers annual economic losses of \$44 billion due to erosion and the depletion of topsoil, impacting the ability to cultivate nutritious food.

Failing to address soil loss and chemical use is leading to non-point source pollution made up of eroded topsoil and excess agrochemicals. These chemicals, unable to be absorbed by plants due to over-application, will runoff from the site, adversely affecting local communities and downstream areas. Agricultural runoff is the leading cause of water quality impacts to rivers and streams, the third-leading source for lakes, and the second-largest source of impairments to wetlands.

The American Sustainable Business Network's business case for supporting clean water finds that 67% of small business owners are concerned that water pollution could hurt their business operations. Access to clean water and healthy waterways is vital to the success of our businesses and our communities' livelihoods. From powering towns, cities, and states, to job creation and daily operational needs, small and large businesses from all sectors are impacted by reduced water quality.

A Regional Example

Within the Delaware River Watershed, more than 8 billion gallons of water are used every day to contribute \$22 billion in annual economic activity to the region. A study from the University of Delaware estimates that improving the water quality of the Delaware River Watershed could generate an additional \$1.1 billion in annual direct-use benefits as well as \$196 million of clean drinking water per year, and large economic benefits to other sectors. With more than 15,000 farms in the watershed, it is vital to the success of this region that agriculture pollution be monitored and reduced, especially in light of the reduced water protections under the Supreme Court's Sackett decision.

2. Avoided Costs of Health Effects for Families, Communities, and Workers

Exposure to chemical inputs, through indirect or direct exposure, has adverse and costly effects on public health. There is a wide range of illnesses from temporary respiratory and skin reactions to long-term serious diseases and cancers affecting those at the site of application and farther away. Due to the significant increase in the rate of childhood cancers, a team of over 60 stakeholders and leaders in the health, science, business, policy and advocacy sectors collaborated on the report: Childhood Cancer: Cross-Sector Strategies for Prevention which in turn linked pesticides as one of the causal factors for the increase in childhood cancer.

Those most vulnerable to adverse health impacts include farmers with direct exposure to chemical inputs and residents in regions where such inputs are prevalent or manufactured, such as in Louisiana's "Cancer Alley". Unfortunately, these areas disproportionately comprise communities of color and those with lower socioeconomic status. A 2022 study confirmed this inequity, revealing its presence in both urban and rural settings. This disparity not only poses extreme health risks and elevated public health costs, but also results in lower worker productivity. A healthier workforce translates to fewer incidents, resulting in decreased lost wages, medical bills, and absences from work and school.

3. Reduced Operational Costs

Shifting away from synthetic inputs is crucial for protecting public and environmental health and will lower costs for producers and homeowners. The price for these chemical inputs continues to rise, shrinking profit margins for producers already operating in increasingly uncertain conditions. According to the most recent data from the American Farm Bureau, Americans spent \$9 billion a year on pesticides and fertilizer; these inputs are projected to represent a record-high 21% of the cost of raising common crops like corn this year, making it the largest on-farm production expense.

Unfortunately, due to supply chain disruptions and increased fuel costs, the USDA expects the 2024 growing year to be the third most costly year on record. As trends are not expected to change anytime soon, an increasing number of farmers are looking to regenerative organic practices as a way to cut costs out of necessity, with and without the value-added of a certification.

The idea and the term “regenerative organic agriculture” was coined by the Rodale Institute to identify a holistic, natural approach to land management that is free from chemical inputs. Regenerative agriculture has many proven benefits, including supporting biodiversity and sequestering carbon above and below ground. Still, the most important benefit is the protection of natural agricultural inputs, lowered artificial input use, increased long-term profitability, and overall risk reduction across a farming supply chain.

4. Consumer Demand for Safer and More Ethical Products

There is strong consumer demand for products grown with sustainable practices. According to a recent study, 75% of consumers in the U.S. are concerned about the environmental impacts of the products they purchase. Moreover, 79% of U.S. consumers reported that if they learned of a product harming the environment, they would switch to a sustainable alternative. A 2016 study showed about 39% of U.S. adults eat at least some organic food and the trend has continued to rise. Outside of the U.S. countries are banning the sale of foods grown with harsh chemicals; for the U.S. food supply chain to remain competitive on the international markets, practices are going to have to shift

III. Chemical Fertilizers

The introduction of chemical fertilizer was revolutionary for our agricultural system. However, today, the EPA emphasizes that it is, “one of America’s most widespread, costly and challenging environmental problems”. Fertilizer pollution contributes to harmful algal blooms, causing disruptions in ecosystems, contaminating drinking water, and adversely affecting local economies.

Over the last 40 years, U.S. farmers have drastically increased their fertilizer usage because of the short-term boosts in yields that it can generate, but it is now known that in the long term, this leaves the soil damaged, dependent on inputs, and much less productive. A 2015 study estimated that fertilizer costs \$157 billion annually in damages to both human health and the environment. Synthetic fertilizers contain heavy metals, nitrates and nitrites that accumulate in the soil, degrading its health, further contributing to costly non-point source pollution. For instance, Sarasota County in Florida reported that high algal bloom years cost the country upwards of \$130,000 in ER visits as a result of exposure. Similarly, the Maine commercial fishing industry reports losses of \$2.5 million in soft shell clam harvests and \$460,000 in mussel harvests from one algal bloom that caused the beds to close.

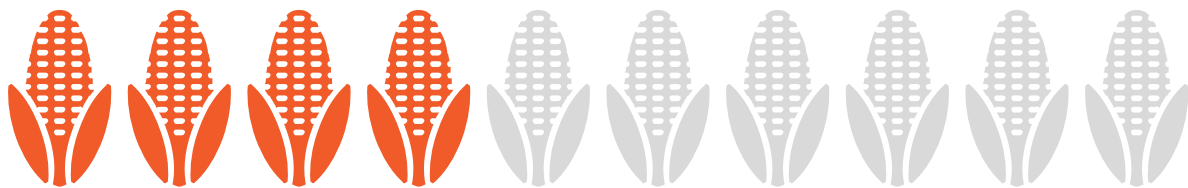
Furthermore, crops grown in synthetic fertilizers are linked to decreased nutrient density in crops year-over-year, and the heavy metals present can be absorbed into crops, posing potential health impacts upon ingestion. The issue extends beyond rural areas: In urban and periurban lawn care, shallow turf grass roots hold less water and require less fertilizer than other plants. However, the U.S. Fish and Wildlife Service estimates that homeowners use up to ten times as many chemical inputs per acre as farmers. Approximately 40-60% of synthetic nitrogen lawn fertilizers end up in surface or groundwater, exacerbated by precipitation and snowmelt, further contributing to algal blooms. With over 40 million acres of grass lawns in the U.S., this is not an insignificant source of pollution.

Unfortunately, these are just the health impacts at the source. As of 2017, almost 1,700 communities nationwide have water that contains nitrate at levels that the National Cancer Institute says could increase the risk of cancer. In states with the most contamination, over two-thirds of counties with the highest levels had household incomes below the state average. This places a heavier burden of clean-up costs on those municipalities. Installing required water treatment facilities in communities with elevated nitrate concentrations but lacking nitrate treatment would cost an additional \$102 million to \$1.47 billion per year.

The issue extends beyond runoff, with the production process contributing significantly. The areas around the fossil fuel-based fertilizer facilities are notorious for chemical spills and air pollution that is tied to cancers, heart disease, infertility and more. These pollutants have severe impacts on surrounding communities, which are predominantly BIPOC communities. This is exemplified by areas like Louisiana's "cancer alley," where contamination has resulted in a significant increase in cancer cases.

In addition to the domestic market's destructive impact, the U.S. remains the world's largest fertilizer importer. The overall market has seen prices surge over 100% since 2020 due to global conflicts, disrupted supply chains, and soaring energy costs. According to the USDA's Commodity Costs and Return, corn farmers spend \$4 of every \$10 earned on chemical fertilizers, yet a substantial portion fails to reach the actual plants.

Proportion of Earnings Spent on Chemical Fertilizers by Corn Farmers



Shifting practices to prioritize soil health builds the above- and below-ground ecosystems, allowing soil microbes to thrive and cycle nutrients including nitrogen and phosphorus. This means the crops can get more readily available nutrients, reducing or eliminating the need for added fertilizer, and in some cases providing higher yields. Notably, a survey of farmers prioritizing soil health practices reported a 67% yield increase. However, it takes time and resources for the soil to transition after years of conventional agriculture. While there are conservation programs that aim to incentivize and assist farmers in adopting these practices, they are chronically overprescribed with less than 50% of applicants receiving funds. In fact, the Environmental Working Group found that almost 40% of the communities contaminated with nitrate at levels above 5 ppm are in counties where no farmers receive cover crop payments through those programs.

While there is still a risk of runoff when overused, organic fertilizers utilize the principles of regenerative organic agriculture by nature to build soil health, as opposed to degrading it, aiding farmers in the transition. Organic fertilizer provides a slower release of nutrients that can be absorbed slowly over time, leaving less to be lost to the water system. In the past, organic fertilizer was labor-intensive to make, more expensive to buy, and did not have a consistent release of nutrients; but recent advances in technology have paved the way for more businesses to offer more accessible and reliable options.

This shift in consumer preference toward organically grown foods has resulted in the market for organic fertilizers growing 8.4% from 2018-2022, and is projected to continue growing. Similarly, a 2018 study showed that U.S. consumers were not only more likely to purchase natural organic fertilizer over chemical, but were even willing to pay a price premium for it.

Business Solutions Exist

In 2019 Delaware River Watershed-based company, Branch Creek Organics launched a line of easy-to-use certified organic fertilizers that are aimed at easing the transition to organic practices across sectors. By encouraging their farmer and landowner clients to first test the soil, Branch Creek can recommend specific nutrients. This targeted approach ensures the most efficient use of their products and keeps as much of the fertilizer out of the waterways as possible. Recognizing that different sectors have different needs, Branch Creek has launched targeted solutions such as the Regenerative Turf System™ which applies the same principles to residential lawn care.

IV. Synthetic Pesticides

Synthetic pesticides have made it much easier to control pests and unwanted weeds, but growing scientific research has demonstrated the harmful health impacts that exposure to pesticides presents to the general public, biodiversity, and the soil. Pesticides cause the most harm when they move throughout the ecosystem. A study from Cornell University found that only about 0.3% of pesticides applied touch the pest, leaving over 99% to accumulate and spread throughout the environment. These movements are responsible for the loss of biodiversity, most notably with pollinators such as bees. Bees are responsible for pollinating one-third of the food we eat and provide \$15-20 billion of pollination services to the U.S. each year. More than 90% of pollen collected from honey bee hives is contaminated with at least one pesticide and is one of the leading causes of pollinators dying at 15-20% higher rates annually.

Moreover, the National Water-Quality Assessment (NAWQA) Project revealed that over 90% of streams in the U.S. contain traces of one or more pesticides, with 100% of fish in urban areas and 85% in agricultural areas also containing pesticides. This highlights the widespread nature of the issue beyond rural landscapes. Interestingly, in urban and periurban areas, pesticides are more prone to over-application and runoff, facilitated by increased impervious surfaces. This pollution exacts a significant toll across sectors, with the fishing industry estimating economic losses of fish valued between \$10-25 million annually. However, it is difficult to accurately track the adverse impacts of pesticide exposure on fish populations, making this figure likely an underestimate of the true economic cost of fish loss due to chemical exposure.

Pesticide use is not only an environmental concern but also a significant public health one. Pesticide exposures occur directly through accidental, occupational, or intentional means, or indirectly through residue commonly found in food or in the environment. There is evidence that many widely used pesticide classes are carcinogenic, linking pesticide exposure to colon, bladder, abdomen, and other types of cancers in adults, as well as blood cancers in children. Furthermore, because pesticides commonly use chemicals that are endocrine disruptors (to prevent pests from reproducing), the same negative effects are seen in humans, linking pesticides to infertility. The associated diseases with exposure to hormone-disrupting chemicals, including pesticides, are estimated to cost \$340 billion annually.

Health risks associated with pesticides disproportionately impact communities of color and low-income areas throughout the life cycle and across geographic regions. In 2021, the 31 pesticide facilities that were found in "significant violation" of environmental laws were situated in areas predominantly inhabited by people of color—60% of the population within a mile of these facilities. Compared to whites, Black and Mexican Americans had up to five times higher traces of pesticides in their bodies, highlighting the alarming disparities. An estimated 10,000 to 20,000 Latinx agricultural workers annually face health complications from inadequate pesticide exposure protections, and yet enforcement issues persist. Only 1% of pesticide-using farms were inspected for worker safety in the last five years, resulting in enforcement actions for just 19% of those inspected.

Meanwhile, farmers are spending more per acre on pesticides than ever before and are not seeing a return. There is overwhelming evidence that neonicotinoids, a class of pesticide applied to hundreds of millions of acres of agricultural lands, either do not provide a yield benefit or an inconsistent yield benefit compared to farmers using Integrated Pest Management (IPM) programs. IMP is a science-based approach to pest management that, through a combination of common-sense practices, works with the ecosystem to provide an effective and more environmentally sensitive strategy.

Business Solutions Exist

There are companies positioned to utilize these principles to provide alternatives to pest control that deter and repel, rather than use harmful chemicals to kill pests, such as ASBN member Earthkind. Specializing in plant-based preventive options such as botanicals and essential odors, Earthkind's products present an alternative to glue traps, poisons, and pesticides. These repellents are registered with the EPA as well as USDA-certified as pest control products, the first bio-pesticide to receive these certifications.

The trend towards sustainability-minded consumers extends into the pest control industry, where a survey finds that 66% of consumers are concerned about the safety of pest control products. This same survey found preferences among consumers for natural, non-chemical products for pest control. Consumers want pest control products that are effective, long-lasting, easy to use, and non-toxic.

V. Policy Landscape

Regulatory Efforts

The Environmental Protection Agency (EPA) currently is tasked with regulating chemical inputs, including both pesticides and fertilizers, to ensure their safety. The EPA started out with some strong regulatory action in this area, including banning the extremely dangerous DDT pesticide. However, watchdog and environmental organizations have recently criticized the EPA for the failure to ban other notoriously dangerous pesticides that have proven to be detrimental to the health of those exposed, especially farm workers. On a global scale, the U.S. is behind in regulating pesticide use. The U.S. uses over 70 pesticides that are banned in the European Union, amounting to 322 million pounds annually.

Similarly, the EPA has dedicated efforts to reduce nutrient pollution from fertilizer including stakeholder partnerships and technical assistance for states. Publicly available data is outdated; however, in 2005 The U.S. Geological Survey estimated that one in five wells have over the legal limit of fertilizer contamination and algal blooms continue to be a problem in all 50 states.

There are also legislative opportunities to advance pesticide and fertilizer regulations at the state level. For example, California, the largest agricultural producer in the country, took a bold step in January 2024 by convening a broad range of stakeholders to create “Accelerating Sustainable Pest Management: A Roadmap for California”. This guide provides recommendations for a systemwide, statewide transition to sustainable pest management over the next 20 years.

Support for the Transition

For farmers and landowners to transition away from chemical inputs, they will need support for regenerative organic agriculture. However, it takes time and resources to successfully shift practices. The biggest barriers to farmer transition are the upfront costs (like fencing, equipment, and cover crop seeds) as well as the lack of access to education and technical assistance on soil health and regenerative methods.

Federal and state legislation needs to assist and incentivize farmers to adapt these practices to support a full shift away from chemical inputs. For example at the state level, Pennsylvania recently created a statewide soil health program and allocated dedicated funding for the next four years to practices that build soil health, such as reduced chemical inputs.

ASBN’s Regenerative Agricultural and Justice working group, made up of a diverse group of business, farmer, and investor stakeholders, identified “aiding the transition to regenerative agriculture” as a key pillar of our 2024 Farm Bill platform. The group has expanded on this platform with 6 marker bills. In addition, the following bills would advance the goal of protecting soil and water health and avoiding the negative environmental and health impacts of dangerous chemicals.

S.269 / H.R.5085 Protect America’s Children from Toxic Pesticides Act (PACTPA) seeks to amend FIDRA to protect children, farmworkers, and the environment by banning dangerous pesticides.

S.1582/ H.R.3650 Opportunities in Organic Act of 2023 proposes three mechanisms to reduce historic barriers to switching to organic farming, including organic certification cost share, transition and resilience funds, and technical assistance. The technical assistance would include education, outreach, and market expansion for healthy soil and natural pest management, among other environmental protections.

S.2472 / H.R.5070 USDA CROP Act of 2023 would give the USDA Office of Pest Management Policy (OPMP) a stronger role in the regulation of products containing pesticides.

H.R.4277 Saving America’s Pollinators Act of 2023 would direct the administrator of the EPA to take actions regulating pesticides to protect pollinators, specifically by banning the use of neonicotinoids to protect bees until a science-based determination is made that they are safe.

H.R.5763 / S.2936 Organic Market Development Act “would codify and increase support for a newly announced U.S. Department of Agriculture (USDA) program, which aims to solve supply chain gaps for the organic market through grants to farmers and businesses as demand increases for organic products.”

S.1016 / H.R.1840 Agriculture Resilience Act of 2023 aims to reduce agricultural emissions 50% by 2030, to be achieved by giving resources to farmers. The programs include increasing research, improving soil health, supporting farm viability, and other programs to reduce greenhouse gas emissions.

H.R. 2720 Strengthening Organic Agriculture Research Act (SOAR): expands federal organic research to empower organic producers with the latest tools, soil health and pest management, and other practices needed to remain competitive and successful

S. 2317 Organic Science and Research Investment Act of 2023 : require USDA's research agencies to better coordinate on organic research and extension

S.2388/ H.R.4443 Cultivating Organic Matter through the Promotion Of Sustainable Techniques Act (COMPOST): makes composting a conservation practice for purposes of USDA conservation programs and requires USDA to establish a program to award grants and loan guarantees for projects that expand access to food waste composting.

S.1194/ H.R. 4040 Recycling and Composting Accountability Act: establishes data collection and reporting requirements concerning composting and recycling programs

H.R.1824 Food and Farm Act is a “comprehensive legislation that refocuses federal resources on those who need it most, fosters innovation, encourages investments in people and the planet, and ensures access to healthy foods.” This bill contains language about soil and water conservation, supporting beginning farmers, and agriculture research.

H.R.1495 / S.719 Precision Agriculture Loan Program Act of 2023 would establish a loan program to assist producers in purchasing precision agricultural equipment.

H.R.3844 Sustainable Agriculture Research Act to advance research in agriculture as potential innovative sustainable solutions.

Oppose Preemptive Bills

S.2019/ H.R.4417 Ending Agricultural Trade Suppression (EATS) Act of 2023: Restrict local and state governments from imposing agricultural standards, such as public health, safety, and animal welfare laws

H.R. 4288 Agricultural Labeling Uniformity Act of 2023: Prohibit local and state governments from enacting pesticide laws that are more protective than federal regulations.

VI. Conclusion

Numerous social, economic, and environmental benefits come with paying attention to regenerative and safer chemical solutions that reach beyond agriculture—and doing so will undoubtedly play a role in creating a healthier environment for years to come. By prioritizing supporting businesses, producing safer products, and advancing public policies to regulate toxic chemicals and incentivize regenerative agricultural and land stewardship best practices, we will be doing our part in caring for the health of both our human and ecological communities as well as growing a vibrant and healthy economy.

Acknowledgements

We would like to thank the staff, leadership, and members of the American Sustainable Business Network for the opportunity to write this report and for their support throughout the project. We would like to extend a very special thanks to Nse Witherspoon, Branch Creek Organics, and ASBN member Earth Kind for providing expert knowledge, insights into business operations, and helpful feedback throughout this process.

American Sustainable Business Network (ASBN) is a movement builder in partnership with the business and investor community. ASBN develops and advocates solutions for policymakers, business leaders, and investors that support an equitable, regenerative, and just economy that benefits all—people and planet. As a multi-issue, membership organization advocating on behalf of every business sector, size, and geography.



Media Contact: Anayana White, Communications Lead,
anayana@asbnetwork.org