



2021

PESTICIDES IN THE PANTRY:

TRANSPARENCY & RISK IN FOOD SUPPLY CHAINS



AS YOU SOW[®]

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INTRODUCTION

In 2019, *As You Sow* published its first edition of *Pesticides in the Pantry: Transparency & Risk in Food Supply Chains*. The goal of that report was to understand and communicate to investors if, and to what extent, the food manufacturing industry is managing the complex risks related to pesticide use in its vast agricultural supply chains. In this year's report, we provide an update on how the landscape of the pesticides issue has evolved over the past two years. We highlight food manufacturers' progress, successes, and failures to act and continue to raise investor awareness about this important issue.

BACKGROUND

Pesticide-intensive agriculture has become the default for how food is grown in the United States. Over one billion pounds of conventional pesticides¹ are used in the U.S. each year.² In the most recent year of data, Americans spent almost \$9 billion on pesticides for agricultural use.³

Pesticide Toxicity

Pesticide toxicity and human health

This widespread use causes widespread exposure. Farmworkers face the most acute exposures when applying pesticides. Due to regular exposure to pesticides and acute poisonings, farmworkers face the most chemical-related illnesses of any occupation in the U.S. and suffer between 10,000 and 20,000 pesticide poisonings per year.^{4,5} Communities near farms can also be exposed due to pesticide drift.⁶ In particular, those living, working, or attending school near larger farms using elevated spraying equipment or crop-dusting planes that apply chemicals to crops and fields face exposure. Children are especially vulnerable to these airborne pesticides, given that their young bodies are still growing and developing.⁷

Pesticide exposure also affects consumers. Pesticide residues have been found in drinking water, soil, rainwater, and a wide range of food products, making human exposure to these chemicals almost unavoidable. Increasingly of concern to consumers, food products that contain pesticide residues can be found across the supermarket; they include many produce items from spinach to cherries,⁸ cereal and oatmeal, grains, beans,⁹ and even flours and cooking oils.¹⁰

The Centers for Disease Control and Prevention's (CDC) biomonitoring has found pesticide residues in the bodies of 90% of Americans studied.¹¹ A growing body of scientific research connects pesticide exposures to many harmful human health effects, including cancer, birth and developmental defects, liver and kidney disease, obesity, and others.¹² Due to the wide use of so many pesticides, science has hardly begun to



understand the health implications of combined exposures, including interactions between chemicals and long-term impacts of small dose exposures over the course of a lifetime.

Pesticide toxicity and inequity

Exposure to pesticides is clearly dangerous, and the burden of exposure falls more heavily on rural communities, immigrant communities, communities of color, and low-income communities. There are approximately 2.4 million farmworkers in the U.S., 75% of whom are immigrants, and 33% of whom earn incomes below the poverty level. In California – the country’s largest agricultural producing state – almost half a million children attend schools within a quarter mile of fields routinely sprayed with pesticides. Of those children, 61% are Latinx. In California counties that are majority Latinx, agricultural fields are sprayed with over 900% more pesticides than communities with fewer Latinx residents.

Exposure to pesticides in food is also inequitable. Food manufacturers and food retailers often argue that consumers have the power to choose certified organic foods to prevent dietary exposure to pesticides. However, organic foods are often significantly more expensive and less available, especially in food deserts or communities with low food access. Organic sales have been steadily growing in recent years but still only make up less than 6% of food sales in the U.S.¹³ For consumers able to choose organic foods, the number one reason given for making that choice is avoiding pesticides.¹⁴

Failure to provide all consumers with food free from pesticide residues, and failure to protect agricultural workers and communities from exposure to agricultural pesticides, creates environmental racism and injustice.

Pesticide toxicity and ecosystem health

Pesticides are incredibly effective at killing unwanted species of plants and insects, but they frequently harm myriad other forms of life in their path. Widespread pesticide use seriously threatens the health of fish and aquatic life, insects, and mammals, including many endangered species.^{15,16} Conclusive evidence demonstrates that pesticides are a primary contributor to the rapid decline in pollinator species, which are essential to agricultural production.^{17,18,19} The sum of these impacts is reduced biodiversity, which is rapidly becoming a serious global threat. The World Economic Forum names biodiversity loss as a top global economic threat in 2021 based on both likelihood and harmful impact.²⁰

Scientists, politicians, and the public are also increasingly recognizing that agriculture is a major contributor to climate change. Globally, the food system contributes to about one third of all greenhouse gas emissions (GHG).²¹ Climate change effects are poised to threaten biodiversity even further, making life uninhabitable for many plant, insect, and animal species (including humans). As we will discuss further in the “Sustainable Solutions” section of this report, farming methods that prioritize ecosystem health have the potential to substantially reduce agricultural emissions (even drawing down carbon from the atmosphere, providing a net benefit),²² but these farming methods cannot be achieved without drastically reducing or eliminating pesticides.²³



Pesticide toxicity and soil health

Fundamentally, pesticide-intensive agriculture threatens the future of food production. This food production system has proven destructive to the very soil we rely on for agriculture. In our current industrial system, topsoil – the most nutrient-rich layer of soil, which is crucial for food production – has been damaged to the point that in some areas of the country, scientists believe that one third of agricultural land's topsoil is completely gone.²⁴ In 2014, a senior United Nations official warned that all of the world's topsoil could be gone within 60 years if



current rates of soil degradation continue, initiating a robust public debate about the global decline of soil health due to current monoculture and input intensive farming practices.²⁵ At the same time that topsoil is being depleted, the ecosystems within the soil that remain are languishing. New research correlates the use of pesticides with significant harm to soil-dwelling invertebrates that make up thriving soil ecosystems.²⁶ Without healthy and abundant soils, the future of our food system is in increasing peril.

Economic costs of pesticide use

In addition to being harmful to human health and the environment, the use of pesticides is financially costly. U.S. producers spent \$9 billion on pesticides in 2012 alone (the most recent year for which data are available).²⁷ Consolidation in the agribusiness industry has led to increased costs to farmers for seeds and pesticides and little choice for alternatives.²⁸ Pesticides are also becoming less effective at eliminating target pests the longer they are used. Herbicide-resistant weeds are increasingly common and leading to devastating crop losses; researchers have estimated that herbicide-resistant weeds could cause tens of billions of dollars of crop losses every year.²⁹

While mass pesticide use remains a standard tool in conventional farming systems, researchers have found that, in many cases, farmers could reduce pesticide use significantly without sacrificing productivity.³⁰ A United Nations human rights report outwardly denounces the “myth” that pesticides are necessary to feed the world's growing population.³¹ Furthermore, researchers have found evidence that despite drastic increases in pesticides, crop losses due to pests have continued to rise.³²

Regulation of pesticides in the U.S.

Approximately 900 active ingredients and 20,000 pesticides are currently registered with the EPA.³³ The EPA is charged with determining that pesticides will not pose unreasonable risks to human health or the environment before they are registered for use in the U.S. While this process should safeguard Americans from harmful chemicals in agriculture, critics have raised a number of serious concerns with the level of protection the agency provides. Outside reviewers have determined that the EPA's consideration of scientific studies on the safety of a given pesticide is often skewed as the agency accepts research provided by the company submitting a request for review and may only include more peer-reviewed, independent research if submitted

through the public comment process.³⁴ Many pesticides are also approved outside of this process under a process known as conditional registration. Conditional registration allows for the use of pesticides that may be necessary in a public health emergency to stop the spread of disease but has been used as a loophole for the approval of pesticides that may cause harm to the environment and public health while they are still being reviewed for safety.³⁵

There is reason to believe that the agribusiness industry has influenced the regulations that monitor it through financial contributions to lawmakers. The industry spent nearly \$100 million in 2018 lobbying Congress to allow pesticide use in the face of widespread and growing concern from the public and scientists.³⁶ A controversial new treatment of pesticide applications by EPA under the Trump Administration quickly “cleared” 600 chemicals for use under what many perceived as an even further weakened safety process.³⁷

Compared to other developed nations, the United States tends to lag in terms of federal regulation. A recent report found that the United States, one of the world’s four top producers and users of pesticides, continues to allow dozens of pesticides that have been banned in the other three top pesticide-producing countries (the EU, China, and Brazil).³⁸

Growing investor concerns

Sustainability is no longer a niche concern for investors in major U.S. companies. Environmental, social, and governance (ESG) issues increasingly influence investment decisions and behavior. One 2020 estimate found that ESG investing represents one third of the over \$50 trillion in U.S. assets under professional management.³⁹

Business Roundtable recently underscored a tenet of modern commerce – that companies thrive when they consider all their stakeholders in decision-making.⁴⁰ When a company invests in its people and reduces harm to communities and the environment, risk is reduced, value is increased, and social impact is improved. Food manufacturers have begun addressing sustainability in their supply chains in a variety of ways, including preventing deforestation, reducing GHG, and reducing water and energy use. Until recently, however, pesticide reduction has been nearly absent from company sustainability policies and reporting to investors.

This oversight opens up significant avenues for liability and regulatory risk and is inconsistent with consumer trends and investor concerns. According to Consumer Reports, 89% of people think it is critical to protect the environment from chemicals, and 86% think it is critical to reduce pesticide exposure and support fair working conditions.⁴¹ Food manufacturers have been under fire in the media since consumer advocacy organizations began testing and reporting on pesticide residues found in consumer products, especially those marketed to children.^{42,43} This attention has led to increased reputational and legal risks for food companies. Addressing pesticide use answers these calls to action while also improving soil health, creating agricultural resiliency in the face of climate change, and protecting communities and the environment.

Sustainable Solutions

Sustainable sourcing and sustainable agriculture are terms commonly used by food companies to describe the production practices employed in the sourcing of their agricultural products. The word “sustainable,” however, does not clearly convey what standards are expected of suppliers and producers implementing such measures, what goals are sought, and whether progress is being measured and achieved. Sustainability may run the gamut from reducing greenhouse gas emissions to limiting the use of energy, water, or pesticides in operations, to reducing biodiversity loss and water pollution, among others. In some cases, it may even be an empty promise, relying on consumers’ attraction to sustainability buzzwords. Meaningful corporate sustainability commitments should clearly and fully define expectations and how progress is evaluated and measured.

Organic

Certified organic farming is the most well-known and well-established system for growing food without the use of synthetic pesticides. The U.S. Department of Agriculture (USDA) governs the definitions and rules for certification of organic practices, including listing substances that are prohibited. In organic practices, natural substances are permitted while synthetic substances are prohibited (including pesticides) in most instances.⁴⁴ Instead of relying on synthetic chemicals, organic farmers rely primarily on ecological practices such as rotating crops, increasing crop diversity, fostering natural predators of pests, and building soil health to improve plant immunity to control pests naturally. Organic farms protect farmworkers and consumers from the health harms of pesticides and support pollinator health. Research has shown that these goals can be met without sacrificing productivity and profitability.

Food companies can invest in organic agriculture to promote sustainability by choosing to source organic ingredients or supporting farmers in transitioning land to organic practices. Organic offers an advantage to companies because it is both certifiable through existing federally recognized methods and has name recognition with consumers. In fact, consumer demand for organic products has seen double-digit growth during most years since the 1990s. While market penetration is still low, organic products account for over 4% of total U.S. food sales and a higher share in some categories.⁴⁵

Integrated Pest Management

Integrated Pest Management (IPM) is increasingly touted by food companies as a strategy for improving sustainability in supply chains. However, the term is too often undefined and can cause confusion as to what the term means to companies or their suppliers. There is neither an industry-wide, accepted definition of IPM nor a regulatory framework governing claims regarding IPM adoption. The EPA provides the following rather unstructured description:

Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.⁴⁶

Such a definition leaves significant room for interpretation. For example, “most economical” and “least possible hazard” might be defined differently depending upon whether one is accounting for short-term or long-term costs, how one defines costs (financial, social, or environmental), and whether externalities such as harms to public health are factored into the equation. This lack of clarity allows for wide variation in how pesticides are used in IPM. As an example, an advocacy organization might claim that an IPM program should eliminate or drastically reduce the use of chemical pesticides⁴⁷ while an agrochemical company might emphasize the importance of the use of pesticides as a vital part of IPM.⁴⁸ When food companies ask or require suppliers to implement IPM programs as a means of addressing pesticide risks, it is vital that they establish clear goals, standards, and metrics, especially as to whether suppliers are expected to reduce pesticide use.

Regenerative agriculture

Regenerative agriculture, a framework that is becoming more commonly adopted, seeks not only to avoid or reduce the environmental and social harms of conventional farming, but also to reverse them by replenishing soil health, improving biodiversity, and increasing farmer profitability. While there is currently no industry-wide definition of “regenerative agriculture,” meaningful regenerative farming systems are built on a holistic set of principles, which include considering and respecting natural ecosystems, restoring biodiversity above and below ground, improving soil health, enhancing the wellness and financial stability of farmers and farm communities, and improving soil capacity for carbon storage. Common practices in regenerative systems

include cover cropping, minimizing or avoiding tilling of the soil, integrating livestock, and crop diversification. Regenerative systems reduce topsoil loss and degradation and can improve soil's ability to pull carbon from the air into the soil, reversing some of agriculture's contribution to climate change.

As of this report, there is a lack of clarity or consensus on whether regenerative agriculture can be successful in tandem with the use of chemical pesticides. Some proponents argue that strategies like no-till or cover cropping can be useful while continuing pesticide use; others argue that the use of pesticides nullifies the positive benefits of increased biodiversity and healthier soil ecosystems.⁴⁹ Given the fact that pesticides harm soil, biodiversity, and farmer and community health, it seems clear that chemical use must be limited or non-existent to retain the benefits of regenerative agriculture practices.⁵⁰ Wherever this debate ends up, evidence demonstrates that regenerative strategies undertaken without the use of pesticides have been shown to be more effective at controlling pests than chemical-intensive conventional farming.⁵¹



Given the lack of standards and variations in regenerative practices, it is critical that any company investing in such practices clearly define and disclose which strategies will be adopted, including explicitly stating whether pesticides will be reduced or eliminated and how success will be measured.

Conclusion

There is growing recognition that the current system of pesticide-dependent farming practices must be replaced with healthier, less harmful methods to ensure the success and future viability of food companies, food supply chains, and farmers themselves. The problems of pesticide use raise risks from litigation on health and environmental damages, to changing consumer demands for healthy foods and reputational loss, to increasingly less effective crop production, especially in the face of climate change. Shareholders recognize there are many ways to successfully approach the problems associated with pesticide-dependent farming methods. A clear set of disclosures on actions taken and successes achieved will assist shareholders in understanding how well these important issues are being managed by food companies.

SCORECARD

Overview

This report benchmarks major food manufacturers on the adoption of practices to measure and mitigate risks related to the use of synthetic pesticides in agricultural supply chains. By scoring a consistent set of questions related to company strategies and disclosure, the report provides a picture of overall industry performance, distinguishes industry leaders from laggards, and provides examples of notable practices. These benchmarks create a pathway for assessing company performance to support investors in advocating for long-term value.

For this report, 17 companies were scored on a total of 28 indicators. Scores are based on a thorough review of publicly available information, including companies' published reports, press statements, and website text. In the case of international companies, U.S. specific information was used where available; if the company did not clearly differentiate between U.S. and global policies, the latter were reported.

Methods

The following 17 companies are included in this review (listed alphabetically): ADM, B&G Foods Inc., Campbell Soup Company, Cargill, Conagra Brands Inc., Danone S. A., Del Monte Foods Inc., General Mills Inc., The Kellogg Company, The Kraft Heinz Company, Lamb Weston Holdings Inc., Mars Incorporated, Mondelēz International Inc., Nestlé, PepsiCo Inc., Post Holdings, Inc., and The J. M. Smucker Company. Each company was given the opportunity to review the information compiled in this report and to provide additional information or clarification.

The following four companies are new this year (i.e., were not included in our 2019 report): ADM, Cargill, Danone, and Mars. ADM and Cargill were included in this year's report in recognition of feedback from companies that major grain processors are an important segment of food manufacturing that can either assist or impede consumer goods companies' action on pesticides. Danone and Mars were also included this year despite neither company being traded on the U.S. stock exchange. Danone (publicly traded in France) and Mars (privately held) both share similar supply chain risks and demands as the other companies in our report; as such, including these companies in our analysis provides insight into the food manufacturing sector as a whole.

Company	Score	Letter Grade
General Mills Inc.	16	B
Lamb Weston Holdings Inc.	15	C
Del Monte Foods Inc.	14	C
PepsiCo Inc.	14	C
Danone S. A.	11	C
The Kellogg Company	10	D
Campbell Soup Company	8	D
Conagra Brands Inc.	7	D
Mondelēz International Inc.	7	D
Nestlé	7	D
Mars Incorporated	6	D
ADM	5	F
The Kraft Heinz Company	4	F
Cargill	3	F
The J. M. Smucker Company	1	F
B&G Foods	0	F
Post Holdings Inc.	0	F

Questions were written to elicit key information about supply chain pesticide use. First, we determine whether companies have conducted risk assessments to understand the risks associated with use of pesticides in their supply chain. We then ask whether companies have strategies or policies to reduce the use of pesticides in their supply chain. This deliberate recognition of pesticide use as an issue to be addressed is a critical first step on a company's path toward identifying solutions.



Public statements demonstrate an important level of accountability but must be followed by metrics for achieving and measuring progress. For this reason, we also ask each company to disclose how it plans to reduce pesticide use and if and how it measures the effectiveness of its

actions through identified targets and goals. General statements of intent, without measurement, do not provide an adequate means of assessing progress.

Investors recognize the reputational risk posed to a company by promoting policies as “sustainable” without meaningful disclosure of the practices that ensure sustainability. Collecting and reporting quantitative data allows companies to demonstrate actual progress toward sustainability goals. Several questions regarding data collection are included to identify those companies that have mechanisms in place for tracking pesticide use on supplier farms. Additional criteria address whether a company collects data through a third-party verified method to better ensure reporting accuracy.

Certain companies have adopted programs that may reduce synthetic pesticide use, including sustainable sourcing, regenerative agriculture, or IPM. In each case, companies earned more points for programs that clearly and publicly delineate the elements of the program and provide metrics by which progress on pesticide reduction from such programs is measured. Other important components include whether companies require supplier farms to participate in the program or have set targets for supplier participation. In some cases, a company may earn points twice for the same commitment if it satisfies the criteria for more than one question (e.g., a sustainable sourcing policy that aligns with criteria of regenerative agriculture would count under both).

The full list of questions can be found in Appendix A.

RESULTS

Question

	ADM	B&G Foods	Campbell's	Cargill	Conagra	Danone	Del Monte	General Mills	Smuckers	Kellogg's	Kraft Heinz	Lamb Weston	Mars	Mondelez International	Nestlé	PepsiCo	Post
Pesticide Risk Reduction Strategy																	
1. Has the company conducted a pesticide risk assessment?																	●
2. Has the company publicly stated a goal to reduce the use of chemical pesticides in its key agricultural supply chains?			●			●	●	●			●	●					●
3. Has the company publicly outlined its strategies for the reduction of pesticide risk?							●	●		●		●					●
4. Has the company publicly stated a target to reduce pesticide use in any of its key supply chains?												●					
5. Does the company publicly report its progress toward its goal of pesticide reduction?							●	●				●					
Pesticide Use Data Transparency																	
6. Does the company collect pesticide use data from its agricultural supply chains?					●	●	●	●		●		●		●			●
7. Does the company publicly disclose pesticide use data (including trends or changes)?					●		●					●		●			
8. Is supplier pesticide use data audited by a third party?																	●
9. Does the company state a public commitment to begin collecting pesticide use data in its supply chains within the next year?			●					●									
Company Policy on Pesticides of High Concern																	
10. Does the company have a supplier standard regarding the use of glyphosate-based herbicides?										●							
11. Does the standard include reduction of glyphosate use as a desiccant?										●							
12. Does the company have a supplier standard regarding the use of neonicotinoids or other pesticides harmful to pollinators (as determined by an authoritative list)?																	
Holistic Sustainable Sourcing Policy																	
13. Does the company have a sustainable agriculture policy/program that aims to holistically address agricultural risks in its supply chains? (This must be above and beyond legal and regulatory requirements)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
14. Does the company publicly describe the expected practices and outcomes with which growers must comply/demonstrate progress under the company's sustainable agriculture policy?	●	●	●	●	●	●	●				●	●	●	●	●	●	●
15. Does the company's sustainable agriculture guidelines include reduction of pesticides?						●	●					●		●	●	●	●
16. Does the company disclose data to demonstrate supplier performance and progress improving sustainability metrics?	●	●			●	●						●	●	●	●	●	●
Integrated Pest Management																	
17. Does the company have a program or initiative to promote or require supplier adoption of Integrated Pest Management (IPM)?		●					●	●		●	●	●					●
18. Does the company publicly describe the expected practices and outcomes of growers adopting IPM?							●	●				●					
19. Does the program's guidelines include an explicit expectation that farmers will use chemical pesticides only as a last resort (i.e. after using prevention methods and biological controls) AND choose least-toxic pesticides when they are necessary?								●				●					
20. Does the company work with an authoritative third party to design and monitor its IPM Program?								●									
21. Does the company disclose data to demonstrate supplier performance toward the program's stated goals?							●					●					
Regenerative Agriculture																	
22. Does the company have a program or initiative to promote supplier adoption of regenerative agriculture practices?	●	●	●	●	●	●	●	●		●		●	●	●	●	●	●
23. Does the company publicly outline measurable outcome goals of regenerative agriculture adoption?	●	●	●	●	●	●	●	●		●			●		●	●	●
24. Does the program include reductions of chemical inputs as an outcome goal?						●	●										
25. Does the company disclose data to demonstrate supplier performance toward the program's stated goals?										●							●
Promoting Agricultural Solutions																	
26. Has the company set a Net Zero or other science-based GHG emissions reduction target relevant to its agricultural supply chains (i.e. including scope 3)?			●	●	●		●		●			●		●		●	●
27. Does the company disclose its lobbying activities relevant to regulatory developments in agriculture?						●	●										
28. Does the company disclose the percentage of key supply chains that are USDA certified Organic?																	
TOTALS	5	0	8	3	7	11	14	16	1	10	4	15	6	7	7	14	0

Key findings

The average company score rose from 6 (out of 30 possible points) in 2019 to 7.5 (out of 27 possible points) in 2021.

Overall, food manufacturers' assessment and mitigation of pesticide risk in their agricultural supply chains is improving, but only slightly. On our grading scale, the average score in 2019 was a D, and the average score in 2021 remains a D. However, a number of individual companies have made important positive steps toward transparency, disclosure, and risk mitigation. These leading practices, which serve as models for other companies, emerged for many of our benchmarks. At the same time, some companies have yet to begin to tackle pesticide risk at all.

Three companies earned a higher letter grade this year than in our previous scorecard (2019).

Del Monte and Lamb Weston moved from a D to a C grade. Both companies have improved public disclosure to more fully outline their policies and practices in sustainable agriculture. These companies have not necessarily changed the way they are doing business, but rather are improving the ways in which they communicate their actions and policies to stakeholders.

Conagra moved from an F to a D grade.

In 2019, Conagra scored only 2 points on our scorecard. This year, the company scores 7 points. Conagra still has significant work to do to develop its pesticide strategy, but it has recently taken important first steps, such as beginning to track pesticide use in key supply chains.

General Mills continues to lead the way in transparency and risk reduction.

General Mills scored the highest of all companies surveyed for a second time, earning 16 out of 27 possible points. The company's approach to shifting key supply chains away from pesticide-intensive industrial agriculture and toward regenerative agriculture practices has become a model for other food manufacturers. The company's pesticide risk reduction strategy is particularly notable for the following components:

- The company clearly outlines its strategies for pesticide reduction.
- Its regenerative agriculture initiative is robust, growing, and thoroughly outlined in public disclosure. The initiative includes data collection to measure progress, including data collection on pesticide use.
- The company is demonstrating a commitment to advancing sustainable agriculture solutions by increasing organic agriculture acreage and investing in soil health research.

The two lowest scoring companies (B&G Foods and Post Holdings) have earned zero points in both 2019 and 2021.

The laggards from our first scorecard have not made any notable improvements in pesticide transparency or risk reduction in their supply chains.

None of the companies surveyed has conducted a pesticide risk assessment for its agricultural supply chains that is disclosed to investors and/or the public.

Companies cannot begin to adequately address pesticide risk if they have not yet determined where that risk is most salient in their specific supply chains. Pesticides are likely used with more frequency and/or intensity for certain crops and/or in certain sourcing regions. Certain pesticides have more risk than

others, while certain pesticide use practices (such as desiccation, i.e., application of a pesticide shortly before the crop is harvested) create greater risk and can lead to higher pesticide residues in food products.

We recommend that companies complete a thorough pesticide risk assessment to understand where targeted efforts will have the most beneficial impact on reducing overall pesticide risk. Companies' efforts to assess risk as well as the resulting assessment should be publicly disclosed. This disclosure provides investors with an understanding that, even if the company has not yet established strategies or targets for pesticide reduction, it has begun the process by investigating how pesticide use impacts its unique family of supply chains.

We are aware that some companies in our survey have worked internally and/or with outside experts to identify areas of pesticide risk in their supply chains, but at this time, those assessment results have not been publicly disclosed and therefore did not receive credit.

Only four of the companies surveyed have publicly outlined strategies for reducing the use of pesticides in their agricultural supply chains.

Given the myriad risks related to pesticide use, as detailed in the background of this report, it is alarming that many of the companies in our scorecard have not yet addressed the issue of pesticide risk or named their strategies for reducing these risks. Investors expect companies to disclose how they manage risks to the environment and public health in order to inform sustainable investment decisions; we similarly expect food companies to acknowledge, assess, and increase disclosure on the risk of pesticides in the coming years.

Leading Practice: General Mills

General Mills thoroughly outlines four strategies for reducing the need for synthetic pesticides in its supply chains:

1. Regenerative Agriculture
2. Integrated Pest Management
3. Expanding Organic Acreage
4. Promoting Pollinator Health

The company describes each of these strategies in detail on a designated page on its website and includes for each strategy its rationale for determining that the strategy will help reduce pesticide risk.

Eight companies have begun collecting pesticide use data in one or more crop supply chains, and one additional company has committed to doing so within the next year.

Data collection is a critical first step to designing and implementing targeted strategies for pesticide reduction. It is important that companies understand the pesticide use patterns within their varied supply chains in order to determine where the greatest risks are present. Measuring pesticide use data also creates a mechanism for measuring and reporting progress in reducing the use of pesticides over time. Without data, companies will be ill equipped to communicate to investors how they are assessing and reducing pesticide risk.

Leading Practice: Lamb Weston

Lamb Weston has begun reporting average pesticide use for potatoes, its number one crop. In its 2020 ESG Report, the company reports 3.6 pounds of active ingredient pesticide used per ton of potatoes grown for its products. In its 2021 ESG Report, the company reports that this metric has been reduced to 2.8 pounds of active ingredient pesticide per ton of potatoes. This piece of data provides critical insight into the pesticide use patterns for this key crop and will allow investors to track progress over time.

Only one of the companies surveyed has a policy to restrict the use of a particular pesticide of high concern (glyphosate).

Scientists have documented higher than average risk for some pesticides and particular use patterns such as desiccation. Using glyphosate as a crop desiccant (i.e., a drying agent to assist with harvest) results in higher uptake of the pesticide in the treated crops and thereby increases the residue levels in food products.

Companies have the power to establish sourcing policies that more aggressively target reduction or elimination of pesticides known to cause significant harm to humans and/or the environment. Neonicotinoids, for example, are known to be significant contributors to pollinator decline, an increasing risk for agriculture. Yet, none of the companies in our survey has asked suppliers to restrict use of this class of pesticides.

Leading Practice: Kellogg's

In late 2019, Kellogg's committed to phase out the use of pre-harvest glyphosate in its wheat and oat supply chains by 2025.⁵² As noted, this particular practice is tied to concerning residues of glyphosate in final consumer goods and is common in these two crops. Kellogg's commitment demonstrates its priority for consumer health and food safety.

Almost every company (15 out of 17) surveyed has a sustainable sourcing policy, yet only six of those policies include any kind of expectation that suppliers work to reduce or minimize the use of pesticides.

Companies are missing the mark by failing to include pesticide risk in sustainable sourcing policies. Pesticide-intensive agriculture is not sustainable. The use of pesticides is detrimental to almost all other common sustainability goals: pesticides harm the health of agricultural workers, nearby communities, and have the potential to harm consumers; are destructive to water quality and water efficiency; reduce carbon sequestration in the soil and harm soil health; harm above ground ecosystems; and contaminate air and food.

The majority of the companies surveyed are communicating to investors and the public that they are working to reduce environmental risk in their agricultural supply chains (by way of sustainable agriculture commitments and programs). However, without accounting for the myriad ways that pesticide use threatens sustainability, these programs fail to address one of the most critical components of environmental risk. Promotion of sustainable agriculture without pesticide risk reduction lacks transparency at best and misleads investors and the public at worst.

Leading Practice: Danone

Pesticide reduction is built into Danone's overarching sustainability principles on which its sustainable sourcing policy is based. The company's environmental principles include "preservation of resources, reduction of use of chemicals, fight against climate change and reduction of greenhouse gas emissions (GHG), environmental management and animal welfare."⁵³

Leading Practice: Del Monte

Del Monte outlines the practices expected of its suppliers in its sustainable sourcing strategy: “The success of our business relies on a healthy environment, both in our growers’ fields and across our own operations. We work to drive sustainable agriculture practices through the following methods: using drip irrigation to reduce water use, encouraging cover crops, reducing fertilizer use, increasing yields through seed breeding (non-gmo), and reducing pesticide use.”⁵⁴

Seven companies are promoting the adoption of Integrated Pest Management (IPM) in their agricultural supply chains. Yet, only three of those companies describe or define IPM.

As we discussed in the “Sustainable Solutions” section of this report, IPM encompasses a variety of strategies for managing pests, and can (but does not necessarily) include the reduction of chemical pesticides. A well-designed, clearly defined, and monitored IPM program has the potential to significantly reduce pesticide risk in agricultural supply chains; however, without clear definition, strategy, and measurement, it can also represent greenwashing. It is critical that companies are clear in their communication so that investors can make wise investment decisions.

Leading Practice: General Mills

General Mills provides a thorough outline of its approach to IPM on its public website. The company defines IPM as “a scientific, ecosystem-based approach that focuses on pest prevention for the long-term by combining techniques that include changes in farming practices, biological pest control, habitat management and the use of pest-resistant seed varieties. When applying IPM strategies, farmers use synthetic pesticides only after monitoring indicates they are needed to prevent damage to their crops.” The company works with an authoritative third party expert (IPM Institute of North America) to guide its strategy. The company’s outlined IPM strategy includes a set of principles for pest management as well as expected techniques, including biological control, cultural controls, pest trapping and soil preparation, and chemical controls.

More than half of the companies surveyed (12 companies out of 17) are promoting adoption of regenerative agriculture practices in their supply chains.

In 2019, only one company (General Mills) had made a commitment to advance regenerative agriculture.

Regenerative agriculture has become a popular topic for companies and investors. There is currently no codified definition of regenerative agriculture; as such, it is critical to understand how each company is defining and measuring adoption of regenerative agriculture.

Meaningful regenerative agriculture commitments include the following:

- A focus on restoring and enhancing ecosystem health, including the health of soil, air, water, and above and below ground species of insects and mammals.
- Goals for reducing GHG, including improving soil carbon storage capacity.
- Investment in agricultural communities, including the financial prosperity of farmers.
- Outlined mechanisms for measuring and reporting progress to stakeholders, including pesticide reduction.

The strongest regenerative agriculture commitments include the following:

- Third party partnerships for providing farmer education and technical assistance.
- Strategies for consistent progressive expansion of regenerative practices throughout the company’s supply chains.

Leading Practice: General Mills

General Mills has led the way for major food manufacturers investing in regenerative agriculture.

The company announced a pledge in early 2019 to advance adoption of regenerative agriculture on one million acres by 2030. Backing up this ambitious target, the company has outlined in clear detail the principles of its regenerative agriculture initiative, the expectations of suppliers, and the mechanisms by which it will measure and report progress.

The initiative includes five key goals: economic resiliency in farming communities, soil health, water efficiency, increased biodiversity, and cow and herd well-being (on dairy operations).

The initiative is based on six principles for growers (i.e., supplier farms): understand the context of your farm operation, minimize soil disturbance, maximize crop diversity, keep the soil covered, maintain living root year round, and integrate livestock.

The company has committed to measuring progress toward its goals with a number of outlined metrics. Biodiversity measurements include inventories of plant species, insects, and birds. Soil health measurements include soil structure, microbial diversity and abundance, water infiltration rate and water holding capacity, and soil organic carbon stocks. Farm management and economics measurements include inventory of cash and cover crop varieties, tillage practices, pesticide and fertilizer use details, and costs of inputs and operations.

Fewer than half of the companies surveyed (8 out of 17) have established a GHG reduction target relevant to their agricultural supply chains.

The United Nations reports that globally, over a third of greenhouse gas emissions are attributable to food supply chains.⁵⁵ Food companies are both significant contributors to the problem of climate change and face critical risks from the effects of climate change. Pesticide-intensive industrial agriculture is particularly sensitive to these impacts. Climate change has already begun to impact agriculture as droughts, floods, extreme temperatures, and severe weather all become more frequent and more intense. These events together threaten rural communities and farmer livelihoods, food security, and price stability.⁵⁶

Investor concern about climate resiliency is continuously growing. Food companies are facing increased pressure to calculate and disclose supply chain contributions to GHG emissions and to establish targets for reduction.

Leading Practice: Nestlé

Early this year, Nestlé published an impressive and ambitious *Roadmap to Net Zero*. This report details the makeup of the company's current GHG emissions footprint (including Scopes 1, 2, and 3), and establishes targets for reducing emissions. For its Scope 3 emissions attributable to supply chains for dairy and livestock (key supply chains for Nestlé), the company aims to reduce CO₂ emissions from a projected baseline of 50.6 million tons to 29.3 million tons by 2030. For emissions attributable to supply chains with impacts to soil and forests (such as cocoa, coffee, and soy), Nestlé aims to reduce CO₂ emissions from a projected baseline of 37 million tons to 14 million tons by 2030.⁵⁷

Results by theme & question

Pesticide Risk Reduction Strategy

1. 7 companies have publicly stated a goal to reduce the use of pesticides in their key agricultural supply chains: Campbell's, Danone, Del Monte, General Mills, Kraft Heinz, Lamb Weston, and PepsiCo.
2. 5 companies have outlined strategies for reducing pesticide use: Del Monte, General Mills, Kellogg's, Lamb Weston, and PepsiCo.
3. 3 of the companies are publicly reporting progress toward their stated goal of reducing pesticides: Del Monte, General Mills, and Lamb Weston.
4. 1 of the surveyed companies has committed to a target (i.e., a goal that is measurable, specific, and time-bound) for pesticide reduction in key supply chains: Lamb Weston.
5. 0 of the surveyed companies have publicly disclosed conducting a pesticide risk assessment.

Pesticide Use Data Transparency

1. 8 companies have begun collecting pesticide use data in one or more crop supply chains: Conagra, Danone, Del Monte, General Mills, Kellogg's, Lamb Weston, Mondelēz International, and PepsiCo.
2. 4 companies have begun publicly disclosing pesticide use data: Conagra, Del Monte, Lamb Weston, and Mondelēz International.
3. 2 companies report that their pesticide use data is third party audited: General Mills and PepsiCo.
4. 1 company has publicly committed to begin collecting pesticide use data: Campbell's.

Company Policy on Pesticides of High Concern

1. 1 company has a supplier standard regarding the use of glyphosate-based herbicides: Kellogg's.
2. 1 company prohibits the use of glyphosate-based herbicides as a desiccant in target supply chains: Kellogg's.
3. 0 of the surveyed companies have a supplier standard regarding the use of neonicotinoids or other pesticides known to cause harm to pollinators.

Holistic Sustainable Sourcing Policy

1. 15 companies have some sort of sustainability policy or program that aims to holistically address agricultural risks in its supply chains (beyond legal and regulatory requirements): ADM, Campbell's, Cargill, Conagra, Danone, Del Monte, General Mills, JM Smucker, Kellogg's, Lamb Weston, Mars, Mondelēz International, Nestlé, and PepsiCo. The only two companies who do not have a sustainable sourcing policy are B&G Foods and Post Holdings.
2. Of the 15 companies with sustainable sourcing policies or programs, 13 publicly describe the expected practices and outcomes on which suppliers must demonstrate progress: ADM, Campbell's, Cargill, Conagra, Danone, Del Monte, General Mills, Kraft Heinz, Lamb Weston, Mars, Mondelēz International, Nestlé, and PepsiCo.
3. Only 6 companies' sustainable sourcing program or policy guidelines include an expectation that suppliers and producers will reduce pesticides: Danone, Del Monte, Lamb Weston, Mondelēz International, Nestlé, and PepsiCo.
4. 9 of the companies with a sustainable sourcing program or policy disclose data to demonstrate progress in meeting those sustainability metrics: ADM, Campbell's, Danone, Del Monte, Lamb Weston, Mars, Mondelēz International, Nestlé, and PepsiCo.

Integrated Pest Management

1. 7 companies have publicly disclosed a program or initiative to promote or require supplier adoption of Integrated Pest Management (IPM): Campbell's, Del Monte, General Mills, Kellogg's, Kraft Heinz, Lamb Weston, and PepsiCo.
2. Of those companies promoting IPM within their agricultural supply chains, only 3 publicly describe the expected practices and outcomes of their IPM programs: Del Monte, General Mills, and Lamb Weston.
3. Among the 3 companies whose IPM expectations are publicly available, only 2 companies explicitly include expectations that farmers use chemical pesticides as a last resort and that farmers choose least-toxic pesticides when pesticides are necessary: General Mills and Lamb Weston.
4. Only 1 company that is promoting IPM adoption in their agricultural supply chains discloses working with a reputable third party to design and monitor the program or initiative: General Mills.
5. Only 2 companies disclose data to demonstrate supplier performance toward the company's stated IPM goals: Del Monte and Lamb Weston.

Regenerative Agriculture

1. 12 companies are promoting the adoption of regenerative agriculture practices: ADM, Campbells, Conagra, Danone, Del Monte, General Mills, Kellogg's, Lamb Weston, Mars, Mondelēz International., Nestlé, and PepsiCo. To qualify for credit on this metric, a company's regenerative agriculture program/initiative must be guided by a close interpretation of generally accepted regenerative principles: considering and respecting natural ecosystems, restoring biodiversity above and below ground, improving soil health, enhancing the wellness and financial stability of farmers and farm communities, and improving soil capacity for carbon storage. The program or initiative does not need to use the term "regenerative" to earn credit as long as it aligns with these principles. A successful regenerative agriculture initiative will necessarily reduce or eliminate reliance on chemical inputs to achieve these goals.
2. Of the companies promoting regenerative agriculture practices, 10 companies have publicly outlined measurable expected outcomes from this shift: ADM, Campbell's, Conagra, Danone, Del Monte, General Mills, Kellogg's, Mars, Nestlé, and PepsiCo.
3. Only 2 of the companies promoting regenerative agriculture practices include reduction of chemical inputs as an outcome: Danone and General Mills.
4. 2 companies have begun reporting data to demonstrate progress toward their regenerative agriculture goals: Kellogg's and PepsiCo.

Promoting Agricultural Solutions

1. Almost half (8 of the 17 companies surveyed) have a net zero or other science-based climate target relevant to their agricultural supply chains, i.e., that include Scope 3 emissions: Cargill, Conagra, Danone, General Mills, Kellogg's, Mars, Nestlé, and PepsiCo.
2. Only 2 companies surveyed publicly disclose lobbying activities specifically related to regulatory developments in U.S. agriculture: Danone and General Mills.
3. None of the companies discloses the percentage of key supply chains that are USDA certified organic.

RECOMMENDATIONS

Investors

Investors are increasingly moving corporations to promote sustainable business practices that consider all stakeholders and encourage long-term value. In the case of pesticides, investors can encourage corporations to invest in robust strategies to reduce the use of chemical pesticides in agricultural supply chains, thereby reducing social and environmental risk. The benchmarks outlined in this report can assist investors in evaluating the degree to which companies are moving to proactively reduce risk in their agricultural supply chains.

Corporations

Major food corporations will be well served by responding to the rapidly changing business environment in which they are valued not only for financial returns, but how they impact communities, consumers, workers, and the environment. Food companies must assess the full range of risks related to pesticide use in supply chains – from reputational to health and environmental risks – and take meaningful steps to reduce them. These steps should include the following:

1. Publicly commit to reducing pesticide use in agricultural supply chains.
2. Outline strategies for pesticide use reduction, including targets, timelines, and metrics for measuring progress year-over-year.
 - a. If these strategies include IPM, Regenerative Agriculture, or other common terms, it is particularly important to establish clear definitions and outline specific supplier goals, or requirements, to both measure and demonstrate progress.
 - b. A tiered approach that prioritizes the reduction or elimination of highest risk chemicals is a sound approach. The Chemical Footprint Project⁵⁸ provides an example of a procedure for prioritizing chemicals (which the Project refers to as Chemicals of High Concern) by rankings from national and international authorities.
3. Modify sustainable sourcing goals to incorporate pesticide use reduction. Avoid making sustainable sourcing claims that do not account for pesticide use.
4. Invest in agricultural methods that not only limit or eliminate chemical pesticide use, but also improve the health of soil and provide alternative solutions to pest management, such as regenerative agriculture.

In addition to these methods, companies can use their membership in industry sustainability collaboratives to advocate that technical assistance providers establish methods for tracking and reporting pesticide use. By working in partnership with academics, non-governmental organizations, and other industry members, companies can help develop solutions to the current challenges in reducing supply chain pesticide use.

Companies also have significant impact on policy. We encourage companies to report any lobbying activity that affects communities and the environment, including participation in trade groups that oppose laws or regulations that would improve health and environmental conditions on farms or in nearby communities. In order to promote changes in the food system that will benefit all stakeholders, companies should support policy changes that promote transparency, improve regulation of toxic chemicals, and bolster efforts to shift supply chains to regenerative practices.

Policy

Policymakers are charged with ensuring that regulatory decisions are made with public health as the first priority. As such, they should ensure the widest sourcing of studies on health and environmental impacts, including studies beyond those offered by applicants when considering approval or continued use of pesticides. New agrochemicals are constantly being produced and introduced to the market, making it difficult to fully assess impact, including long-term effects. In such a situation, the precautionary principle provides a sounder approach to risk management. Utilized by other developed nations, this principle states that in the case of uncertain outcomes, it is important to protect against negative risks. In doing so, regulators would consider a new chemical potentially harmful until scientists have proven its safety.

Moving beyond pesticide regulation, policymakers have opportunities to reshape our agricultural system to promote agricultural resilience (i.e., resilient soils, resilient ecosystems, resilient communities, and resilient economies). New legislation should promote shifts to regenerative agriculture models that prioritize ecosystem health, farmer livelihoods, and restoration of soils to more effectively store water and carbon.

Consumers

Consumers have the power to “vote with their wallets.” Consumers can let food companies know their values and preferences with regard to reduced pesticide use that is safer for consumers, farmworkers, and the environment. Consumers can also choose brands that support transparency in food production and pesticide-free ingredient sourcing. When consumers are faced with package claims about sustainability, it is important to consider whether the company producing that product has clearly defined the meaning of its claims. Where possible, consumers can also purchase products that are certified organic, which disallows the use of synthetic pesticides.



APPENDIX A (Scorecard Survey Questions)

Pesticide Risk Reduction Strategy

1. Has the company conducted a pesticide risk assessment?
2. Has the company publicly stated a position or practice to reduce the use of chemical pesticides in its key agricultural supply chains ("key supply chains" are those on which the company most relies, based on volume, and those determined to have especially high environmental risk)?
3. Has the company publicly outlined its strategies for the reduction of pesticide use?
4. Has the company publicly stated a target to reduce pesticide use in any of its key supply chains? (for the purpose of this question, a "target" is a goal that includes a commitment to meet a measurable result by a specific date, and "key supply chains" are those on which the company most relies, based on volume, and those determined to have especially high environmental risk)
5. Does the company publicly disclose its progress toward its stated goal(s)?

Supply Chain Pesticide Use Data Transparency

6. Does the company collect pesticide use data from its agricultural supply chains?
7. Does the company publicly disclose pesticide use data (including trends or changes)?
8. Is supplier pesticide use data audited by a third party?
9. (If the company does not currently collect pesticide use data in its supply chains) Does the company state a commitment to begin collecting pesticide use data in its supply chains within the next year? (only applicable if no to #6, company can still earn a point if it has missed the other three points in this section)

Company Policy on High Priority Pesticides

10. Does the company have a supplier standard regarding the use of glyphosate-based herbicides?
11. Does the standard include reduction of glyphosate use as a desiccant?
12. Does the company have a supplier standard regarding the use of neonicotinoids or other pesticides known to be harmful to pollinators (as determined by an authoritative list)?

Sustainable Agriculture Policy

13. Does the company have a sustainable agriculture policy/program that aims to holistically address agricultural risks in its supply chains? This must be above and beyond legal and regulatory requirements.
14. Does the company publicly describe the expected practices and outcomes with which growers must comply/demonstrate progress under the company's sustainable agriculture policy?
15. Does the company's sustainable agriculture guidelines include reduction of pesticide use?
16. Does the company disclose data to demonstrate supplier performance and progress improving sustainability metrics? (For the purpose of this question, percentages of suppliers meeting "sustainable sourcing" criteria only counts if yes to #14).

Integrated Pest Management

17. Does the company have a program or initiative to promote supplier adoption of Integrated Pest Management (IPM)?
18. Does the company publicly describe the expected practices and outcomes of growers adopting IPM?
19. Does the program's guidelines include an explicit expectation that farmers will use chemical pesticides only as a last resort (i.e. after using prevention methods and biological controls) AND choose least-toxic pesticides when they are necessary?
20. Does the company work with an authoritative third party to design and monitor its IPM Program?
21. Does the company disclose data to demonstrate supplier performance toward the program's stated goals?

Regenerative Agriculture Initiatives?

22. Does the company have a program or initiative to promote supplier adoption of regenerative agriculture practices?¹
23. Does the company publicly outline measurable outcome goals of regenerative agriculture adoption?
24. Does the program include reductions of chemical inputs as a goal or practice?
25. Does the company disclose data to demonstrate supplier performance toward the program's stated goals?

Promoting Agricultural Solutions

26. Has the company set a Net Zero or other science-based GHG emissions reduction target relevant to its agricultural supply chains (i.e. including scope 3)?
27. Does the company disclose its lobbying activities relevant to regulatory developments in agriculture?
28. Does the company disclose the percentage of key supply chains that are USDA certified Organic?

Total Points Possible: 27

1. In order to qualify for credit, a company's regenerative agriculture program/initiative must be guided by a close interpretation of the following principles: considering and respecting natural ecosystems, restoring biodiversity above and below ground, improving soil health, enhancing the wellness and financial stability of farmers and farm communities, and improving soil capacity for carbon storage. As *You Sow* maintains that a successful regenerative agriculture initiative must also reduce or eliminate reliance on chemical inputs (credit given for alignment with this principle in Q 24.)

ENDNOTES

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