Corn Syrup
Key Performance Indicators

Version 02.06

THESIS
BY THE SUSTAINABILITY CONSORTIUM

About the Corn Syrup Key Performance Indicators

This THESIS Performance Assessment covers sugars and syrups derived from the starch of corn (maize). This includes, but is not limited to, corn syrup and glucose syrup. It does not include sugar, pancake syrup, or maple syrup.
The information you collect for these KPIs should cover your global production and not be specific to any region or buyer (e.g., retailer).
Remember to download the assessment documents to help you in completing the KPIs. Make sure to review the detailed guidance and resources for each KPI. Your work is saved automatically but not shared until you are ready.

Introduction

The Sustainability Insight System, THESIS, from The Sustainability Consortium (TSC) is a comprehensive and holistic solution for understanding environmental and social performance in consumer goods supply chains. These key performance indicators (KPIs) can be used to assess action, transparency, and continuous improvement on the material sustainability issues for brands, manufacturers, and producers.

TSC created this KPI set using its science-based, multi-stakeholder, and full life-cycle development process. TSC members and partners, including manufacturers, retailers, suppliers, service providers, NGOs, civil society organizations, governmental agencies, and academics, contributed valuable perspectives and expertise.

TSC is a global organization dedicated to improving the sustainability of consumer products that also offers a portfolio of services to help drive effective implementation. For more information please visit www.sustainabilityconsortium.org

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Key Performance Indicators

QUESTION	RESPONSE OPTION
1. Crop Supply Mapping For what percentage of your crop supply can you identify the country, region, or farm of origin?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____% of our crop supply, by mass, was not traced to the country, region, or farm of origin. **B2.**_____% of our crop supply, by mass, was traced to the country of origin. **B3.**_____% of our crop supply, by mass, was traced to the region of origin. **B4.**_____% of our crop supply, by mass, was traced to the farm of origin.
2. Access to Opportunities for Smallholder Farmers What percentage of your smallholder farmer-sourced crop supply, by mass, came from traders, intermediaries, or cooperatives that confirmed the following?	**A.** Not applicable. We do not source our supply from smallholder farmers. **B.** We are unable to determine at this time. **C.** We are able to report the following: **C1.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to basic services. **C2.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to agricultural services. **C3.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from receive agricultural training. **C4.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to financial services and markets. **C5.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to risk management services.
3. Deforestation and Land Conversion - On-farm What percentage of your crop supply, by mass, has been determined to be grown on fields that are low-risk for conversion to non-forest use, have had zero conversion of High Conservation Value (HCV) forests or High Carbon Stock (HCS) forests since 2010, had zero deforestation, or was grown on fields with zero conversion of HCV and HCS non-forest lands since 2010?	**A.** We are unable to determine at this time. **B.** We are able to report the following percentages for our crop supply: **B1.**_____% of our crop supply is grown on fields that have been determined to be low-risk for conversion to non-forest use. **B2.**_____% of our crop supply has been determined to be grown on fields that have had zero conversion of HCV forests since 2010. **B3.**_____% of our crop supply has been determined to be grown on fields that have had zero conversion of HCS forests since 2010. **B4.**_____% of our crop supply is grown on fields with zero deforestation since 2010. **B5.**_____% of our crop supply is grown on fields with zero conversion of HCV and HCS non-forest lands since 2010.
4. Fertilizer Application - On-farm What was the nitrogen use intensity and phosphorus surplus associated with fertilizer application on the fields where your crops were produced?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____ kg nitrogen per metric tonne of crop harvested. **B2.**_____% of our crop supply, by mass, is represented by the number reported in B1. **B3.**_____ kg phosphorus surplus per metric tonne of crop harvested. **B4.**_____% of our crop supply, by mass, is represented by the number reported in B3.

5. Greenhouse Gas Emissions Intensity - On-farm What was the greenhouse gas emissions intensity associated with the farming operations that produced your crop supply?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____ kg CO2e per metric tonne of crop harvested. **B2.**_____% of our crop supply, by mass, is represented by the number reported above.
6. Irrigation Water Use Intensity - On-farm What was the irrigation water use intensity associated with the farming operations that produced your crop supply?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____ cubic meters of irrigation water use per metric tonne of crop harvested. **B2.**_____% of our crop supply, by mass, is represented by the number reported above.
7. Labor Rights - On-farm How did your organization manage labor rights risks in the operations that produced your crop supply?	**A.** We are unable to determine at this time. **B.** We are able to report the following: **B1.**_____% of our crop supply, by mass, was produced in operations that were covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining. **B2.**_____% of our crop supply, by mass, was produced in operations that were reviewed by a risk assessment which identifies high-risk areas for labor rights abuses. **B3.**_____% of our staff responsible for procurement activities have been trained on labor rights issues in the supply chain. **B4.**_____% of our staff responsible for procurement activities have been evaluated via performance metrics on labor rights improvements in the supply chain. **B5.**_____% of our crop supply, by mass, was produced in operations that were low risk, that were high risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years.
8. Pesticide Application - On-farm What percentage of your crop supply, by mass, was provided by farming operations that had a verifiable, site-based environmental, health, and safety (EHS) program to assess and manage impacts to humans and the environment from pesticides and that shared data on their pesticide use?	**A.** We are unable to determine at this time. **B.** We are able to report the following percentages for our crop supply: **B1.**_____% of our crop supply, by mass, was provided by farming operations that had a verifiable EHS program to assess and manage impacts to humans and the environment from pesticides. **B2.**_____% of our crop supply, by mass, was provided by farming operations that shared data on their pesticide use.
9. Soil Erosion - On-farm How much soil erosion was associated with the farming operations that produced your crop supply?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____ metric tonnes of soil erosion per metric tonne of crop harvested. **B2.**_____% of our crop supply, by mass, is represented by the number reported above.
10. Worker Health and Safety - On-farm How did your organization manage worker health and safety risks in the operations that produced your crop supply?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our supply: **B1.**_____% of our crop supply, by mass, was produced in operations that have performed a risk assessment to identify high-risk areas for health and safety. **B2.**_____% of our crop supply, by mass, was produced in operations that train workers on health and safety procedures. **B3.**_____% of our crop supply, by mass, was produced in operations that implement a verifiable worker health and safety plan. **B4.**_____% of our crop supply, by mass, was produced in operations that have a worker health and safety performance monitoring system in place. **B5.**_____% of our crop supply, by mass, was produced in operations that were audited in the last three years on worker health and safety issues.

11. Yield - On-farm What was the average yield of your crop supply from farming operations?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our crop supply: **B1.**_____ metric tonnes of crop supply harvested per hectare planted. **B2.**_____% of our crop supply, by mass, is represented by the number reported above.
12. Greenhouse Gas Emissions Intensity - Processing What was the greenhouse gas emissions intensity associated with final processing of your product?	**A.** We are unable to determine at this time. **B.** Our greenhouse gas emissions intensity was: **B1.**_____ kg CO2e per metric tonne of product. **B2.**_____% of our product, by mass, is represented by the number reported above.
13. Water Use Intensity - Processing What was the water use intensity in the company-owned or contract manufacturing facilities that manufactured your final product?	**A.** We are unable to determine at this time. **B.** Our water use intensity was: **B1.**_____ liters per metric tonne of product. **B2.**_____% of our product, by mass, is represented by the number reported above.
14. Packaging Raw Material Sourcing What percentage of the sales packaging used for your final products, by mass, was post-consumer recycled material and sustainably-sourced renewable virgin material?	**A.** Not applicable. We do not use sales packaging for our product. **B.** We are unable to determine at this time. **C.** The sales packaging used for our final products was: **C1.**_____% post-consumer recycled material. **C2.**_____% sustainably-sourced renewable virgin material.
15. Sustainable Packaging Design and Production What percentage of the sales packaging for your final product was recyclable, was formally assessed for material and process efficiency and weight or volume optimization, had demonstrated quantified environmental impact reduction, and was labelled for recycling according to an established standard?	**A.** Not applicable. We do not use sales packaging for our product. **B.** We are unable to determine at this time. **C.** We are able to report the following for the sales packaging used for our final products: **C1.**_____% of our packaging, by mass, was recyclable. **C2.**_____ % of our packaging, by mass, has demonstrated progress on goals for material and process efficiency during packaging manufacturing. **C3.**_____ % of our packaging, by mass, has demonstrated progress on goals for weight or volume optimization during packaging design. **C4.**_____ % of our packaging, by mass, has a demonstrated quantified environmental impact reduction. **C5.**_____ % of our packaging, by units sold in the US and Canada, was labeled with How2Recycle. **C6.**_____ % of our packaging, by units sold in regions outside the US and Canada, was labeled with an established third-party recycling label.

Key Performance Indicators with Guidance

1. CROP SUPPLY MAPPING

Question

For what percentage of your crop supply can you identify the country, region, or farm of origin?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following for our crop supply:
  - **B1.**_____% of our crop supply, by mass, was not traced to the country, region, or farm of origin.
  - **B2.**_____% of our crop supply, by mass, was traced to the country of origin.
  - **B3.**_____% of our crop supply, by mass, was traced to the region of origin.
  - **B4.**_____% of our crop supply, by mass, was traced to the farm of origin.

Guidance

Calculation & Scope

This question measures your knowledge of the origins of your crop supply and does not affect your ability to use both primary and regional data in questions requiring farm-level metrics.

Calculate B1 as the mass of your crop supply that was not traced to the country, region, or farm of origin, divided by the total mass of your crop supply, then multiply by 100.

Calculate B2, B3, and B4 as the mass of your crop supply that was traced to the country, region, and farm of origin, respectively, divided by the total mass of your crop supply, then multiply by 100.

The percentages reported for B1, B2, B3, and B4 must be mutually exclusive and their sum must equal 100%. Any individual source of your crop supply can only be used once across the response options, and the highest level of specificity should be reported for crop supply that can be traced to more than one level of origin. For example, if you know the farm, region, and country of origin for 25% of your crop supply, report 25% in B4 (farm of origin). Then, if you know both the region and country of origin for 25% of your crop supply, report 25% in B3 (region of origin). Next, if you know only the country of origin for 30% of your crop supply, enter 30% in B2 (country of origin). Last, if you know neither the farm, region, or country or origin for the remaining 20% of your crop supply, report 20% in B1. Verify that the sum of the percentages you entered in B1-B4 does not exceed 100%: 20% (B1) + 30% (B2) + 25% (B3) + 25% (B4) = 100%.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

A country is defined as a nation-state recognized by the United Nations. A region is defined as a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department). Due to the variance in how "region" may be defined, respondents are encouraged to use a consistent interpretation from year to year when reporting data for this question. A farm is an area of land and its buildings that may be comprised of one or more locations that are managed together.

Procurement data, trade networks, or national or subnational product production data may help to identify the origin of your product supply.

If using Field to Market's Fieldprint Platform, Field to Market's Continuous Improvement Accelerator, or the Cool Farm Tool to measure farm-level environmental impacts for any portion of your crop supply, you can enter that portion of your supply in B4. Additionally, the percent of your supply from GlobalG.A.P. certified farms can be included in your response for B4.

Certifications, Standards & Tools

Cool Farm Tool: This calculator is available globally and calculates greenhouse gas emissions associated with farms, processing facilities, and transportation for many agriculture and livestock products.

http://www.coolfarmtool.org/CoolFarmTool

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Field to Market's Fieldprint Platform: Utilized by Insight and Innovation Projects enrolled in Field to Market's Continuous Improvement Accelerator, the Fieldprint Platform calculates and aggregates field-level outcomes for land use efficiency, soil conservation, irrigation water use efficiency, energy use efficiency, and greenhouse gas emissions for U.S. alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat farms. It also provides index scores for soil carbon, nitrogen and phosphorus impacts on water quality, and biodiversity at the field and farm level. The Platform offers an optional module to quantify soil carbon estimates if projects wish to calculate sequestration alongside avoided emissions. In addition, farmers have the ability to compare individual sustainability performance against project, state, and national benchmarks to assess opportunities for continuous improvement.
https://fieldtomarket.org/our-programs/fieldprint-platform/

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

QS. Quality scheme for food: Certifications through the QS scheme allow for traceability from farm to store.
https://www.q-s.de/

Hotspots Addressed

1. *Supply chain traceability*

2. ACCESS TO OPPORTUNITIES FOR SMALLHOLDER FARMERS

Question

What percentage of your smallholder farmer-sourced crop supply, by mass, came from traders, intermediaries, or cooperatives that confirmed the following?

Response Options

- **A.** Not applicable. We do not source our supply from smallholder farmers.
- **B.** We are unable to determine at this time.
- **C.** We are able to report the following:
  - **C1.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to basic services.
  - **C2.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to agricultural services.
  - **C3.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from receive agricultural training.
  - **C4.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to financial services and markets.
  - **C5.**_____% of our smallholder farmer-sourced crop supply came from traders, intermediaries, or cooperatives that confirmed that the smallholders they sourced from have access to risk management services.

Guidance

Calculation & Scope

Calculate C1 as the mass of your smallholder farmer-sourced crop supply that came from traders, intermediaries (e.g., mills), or cooperatives that confirmed that the smallholders they sourced from have access to basic services, divided by the total mass of your smallholder farmer-sourced crop supply, then multiply by 100. Examples of basic services include, but are not limited to, clean drinking water, water for irrigation, quality education for smallholder farmers and their families, and health care. If any portion of your smallholder farmer-sourced crop supply is certified under Fairtrade International or Rainforest Alliance, you may include that portion of your supply in your response for C1.

Calculate C2 as the mass of your smallholder farmer-sourced crop supply that came from traders, intermediaries (e.g., mills), or cooperatives that confirmed that the smallholders they sourced from have access to agricultural services, divided by the total mass of your smallholder farmer-sourced crop supply, then multiply by 100. Examples of agricultural services include, but are not limited to, inputs (e.g., seeds and fertilizers), equipment (e.g., irrigation, tools, tractors, implements, and mobile phones), infrastructure (e.g., drying facilities and storage facilities), and extension services.

Calculate C3 as the mass of your smallholder farmer-sourced crop supply that came from traders, intermediaries (e.g., mills), or cooperatives that confirmed that the smallholders they sourced from receive agricultural training, divided by the total mass of your smallholder farmer-sourced crop supply, then multiply by 100. Agricultural training programs should provide smallholder farmers with information and knowledge on how to improve their farming practices, increase productivity, and improve the quality of their product. Trainings should be accessible for both male and female farmers and should be designed in such a way that farmers are able to directly implement the acquired knowledge. Agricultural training topics include, but are not limited to, pruning, weeding, shade management, soil conservation and management practices, water conservation, integrated pest management (IPM), fertilizer application, Good Agricultural Practices, and child labor awareness. If any portion of your smallholder farmer-sourced crop supply is certified under Fairtrade International, GlobalG.A.P., Rainforest Alliance or UTZ, or verified under SAI Platform Farm Sustainability Assessment (FSA), you may include that portion of your supply in your response for C3.

Calculate C4 as the mass of your smallholder farmer-sourced crop supply that came from traders, intermediaries (e.g., mills), or cooperatives that confirmed that the smallholders they sourced from have access to financial services and markets, divided by the total mass of your smallholder farmer-sourced crop supply, then multiply by 100. Examples of financial services include, but are not limited to, fair prices, credit, and loans. If any portion of your smallholder farmer-sourced crop supply is certified under Fairtrade International or the Fair for Life program, you may include that portion of your supply in your response for C4.

Calculate C5 as the mass of your smallholder farmer-sourced crop supply that came from traders, intermediaries (e.g., mills), or cooperatives that confirmed that the smallholders they source from have access to risk management services, divided by the total mass of your smallholder farmer-sourced crop supply, then multiply by 100. Risk management services should be designed to increase smallholder farmer resiliency and reduce smallholder vulnerability to external risks, such as large price fluctuations and crop failures. Examples of risk management services include, but are not limited to, diversification of income sources, long-term contracts and a stable product demand, and insurance.

The services identified in C1-C5 can be provided as part of a certification program or through external partnerships.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

Fair for Life Certification Program: The Fair Life program provides certification for fair trade and responsible supply chains. The goal of Fair for Life is to ensure social and economic benefits to socioeconomically disadvantaged agricultural producers and workers and to ensure that smallholder producers receive a fair share.
http://www.fairforlife.org/

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

ProTerra Certification: The ProTerra Certification aims to measure good agricultural practices, the protection of high conservation value areas, biodiversity, and worker and community rights. Social responsibility and environmental sustainability are the focus of the principles and guidance included in the certification.
https://www.proterrafoundation.org/news/the-new-proterra-certification-standard-version-4-0-is-out-3/

SAI Platform – Farm Sustainability Assessment (SAI-FSA): The SAI Platform Farm Sustainability Assessment (SAI-FSA) is an easy-to-use tool that assesses farm environmental, social, and economic sustainability. The FSA is based on SAI Platform's Principles and Practices for sustainable agriculture and can be used by farmers as a benchmarking tool for comparing various certification schemes and proprietary codes.
http://www.fsatool.com/

Sedex Members Ethical Trade Audit: Sedex Members Ethical Trade Audit is an auditing system that aligns with Ethical Trading Initiative's Base Code as well International Labour Organization Conventions. It has been developed to provide a public auditing methodology and format for companies to use to assess compliance.
https://www.sedex.com/our-services/smeta-audit/

THESIS Help Center Video: Access to Opportunities for Smallholder Farmers KPI: Short video tutorial on the Access to Opportunities for Smallholder Farmers KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529538191

Background Information

GIZ: Growing Business with Smallholders: The German Federal Ministry for Economic Cooperation and Development has created a document that provides guidance and steps for engaging and doing business with smallholder farmers.
https://www.endeva.org/wp-content/uploads/2014/11/Guide-Growing_Business_with_Smallholders_large-2.pdf

Oxfam: Think Big Go Small: Oxfam has produced a document outlining potential benefits from industry-smallholder interactions, and examples of successful implementation.
http://www.oxfam.org/en/policy/think-big-go-small

	Sustainable Food Lab – Smallholders: The Sustainable Food Lab helps organizations become more sustainable by providing them with practical tools and advice. Their white paper, Enabling Smallholder Farmers to Improve Their Incomes, written in 2017 in collaboration with Business Fights Poverty, contains advice on how to improve the economic benefits of trade for smallholder farmers and their families. http://sustainablefoodlab.org/wp-content/uploads/2017/09/BFP-Improving-Incomes-WEB.pdf
Definitions	**Smallholder farms:** Farms managed and operated by a family and predominantly reliant on family labor, where seasonal workers work alongside family members in peak seasons (e.g., harvest). The size of smallholder farms ranges generally from two hectares (approximately 5 acres) or less in size up to 50 hectares (approximately 124 acres), depending on the crop type and geographic region of production.
Hotspots Addressed	***2.*** *Access to opportunities for smallholder farmers – On-farm*

3. DEFORESTATION AND LAND CONVERSION – ON-FARM

Question

What percentage of your crop supply, by mass, has been determined to be grown on fields that are low-risk for conversion to non-forest use, have had zero conversion of High Conservation Value (HCV) forests or High Carbon Stock (HCS) forests since 2010, had zero deforestation, or was grown on fields with zero conversion of HCV and HCS non-forest lands since 2010?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following percentages for our crop supply:

B1._____% of our crop supply is grown on fields that have been determined to be low-risk for conversion to non-forest use.

B2._____% of our crop supply has been determined to be grown on fields that have had zero conversion of HCV forests since 2010.

B3._____% of our crop supply has been determined to be grown on fields that have had zero conversion of HCS forests since 2010.

B4._____% of our crop supply is grown on fields with zero deforestation since 2010.

B5._____% of our crop supply is grown on fields with zero conversion of HCV and HCS non-forest lands since 2010.

Guidance

Calculation & Scope

Calculate B1 as the mass of your crop supply that was grown on fields that have been determined to be low-risk for the conversion of forests to non-forest use, divided by the total mass of your crop supply from all fields, then multiply by 100. A field can be considered low risk for conversion to non-forest use when one of the following is true: The field is located in a jurisdiction that is assessed to be low risk by a risk classification analysis; the field is located in a jurisdiction that is assessed to be high risk by a risk classification analysis but corrective actions are taken where needed; or the site risk was determined to be low by an on-site audit. In B1 you may include your crop supply that has been certified by any of the certifications listed in the Certifications, Standards & Tools section below.

Calculate B2 as the mass of your crop supply that was grown on fields that have had zero conversion of HCV forests since January 1, 2010, divided by the total mass of your crop supply from all fields, then multiply by 100. In B2 you may include your crop supply that has been certified by any of the certifications listed in the Certifications, Standards & Tools section below.

Calculate B3 as the mass of your crop supply that was grown on fields that have had zero conversion of HCS forests since January 1, 2010, divided by the total mass of your crop supply from all fields, then multiply by 100.

Calculate B4 as the mass of your crop supply that was grown on fields that have had zero deforestation since January 1, 2010 divided by the total mass of your crop supply from all fields, then multiply by 100.

Calculate B5 as the mass of your crop supply that was grown on fields with zero conversion of HCV and HCS non-forest lands since January 1, 2010 divided by the total mass of your crop supply from all fields, then multiply by 100. HCV and HSC non-forest lands include HCV and HCS non-forest native ecosystems and ecologically sensitive regions, including but not limited to grasslands and Gran Chaco region in South America.

Zero deforestation means that since January 1, 2010, no existing forest was converted to non-forest use for the production of the crop used in your products. Offsets or zero-net deforestation are not included in this definition. Land on which deforestation has occurred since 2010 may be considered to have zero deforestation if restored to its previous state as determined by tree cover, species composition, stored carbon, and all other relevant factors. The absence of deforestation must be confirmed using monitoring of the specific land tracts where the crop originated, such as remote sensing, audits, or other direct observations.

The cut-off date of January 1, 2010 after which forest conversion is prohibited is chosen to ensure a common range of periods (not very recent or long standing cut-off dates) that most methodologies and sustainability initiatives establish and apply for forest, HCV, HCS, and deforestation.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

The maximum possible response for each response option is 100%. However, multiple response options may be applicable to the same portion of your crop supply. For example, supply included in the calculation of B2, B3, and/or B4 could also be included in the calculation of B1 if the stated conditions are also met.

Certifications, Standards & Tools

Fair for Life Certification Program: The Fair Life program provides certification for fair trade and responsible supply chains. The goal of Fair for Life is to ensure social and economic benefits to socioeconomically disadvantaged agricultural producers and workers and to ensure that smallholder producers receive a fair share.
http://www.fairforlife.org/

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

International Sustainability & Carbon Certification: ISCC is a certification system covering ecological and social sustainability requirements, greenhouse gas emissions tracking, and traceability in the supply chain. An ISSC certification represents reductions in greenhouse gas emissions, avoidance of high carbon stock land, biodiversity management, sustainable agricultural practices, and human rights protection.
https://www.iscc-system.org/

SAI Platform – Farm Sustainability Assessment (SAI-FSA): The SAI Platform Farm Sustainability Assessment (SAI-FSA) is an easy-to-use tool that assesses farm environmental, social, and economic sustainability. The FSA is based on SAI Platform's Principles and Practices for sustainable agriculture and can be used by farmers as a benchmarking tool for comparing various certification schemes and proprietary codes.
http://www.fsatool.com/

The HCS Approach Toolkit: This High Carbon Stock Approach Toolkit takes practitioners through the steps in identifying HCS forest, from initial stratification of the vegetation using satellite images and field plots, through a decision tree process to assess the conservation value of the HCS forest patches in the landscape and ensure communities' rights and livelihoods are respected, to making the final conservation and land use map.
http://highcarbonstock.org/the-hcs-approach-toolkit/

THESIS Help Center Video: Deforestation and Land Conversion – On-farm KPI: Short video tutorial on the Deforestation and Land Conversion – On-farm KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/531017287

Background Information

Greenpeace High Carbon Stock Approach: This website provides information about how to identify High Carbon Stock forests.
https://www.greenpeace.org/archive-international/en/campaigns/forests/solutions/HCS-Approach/

High Carbon Stock Approach: This website provides a standardized methodology for identifying natural, high carbon stock forest areas.
http://highcarbonstock.org

High Conservation Value Resource Network: This resource provides common guidance for how to identify, manage, and monitor High Conservation Value forest areas.
https://hcvnetwork.org/

Jurisdictional and Nested REDD+ (JNR): This website describes a pathway for existing and new projects to be integrated or 'nested' within broader jurisdictional REDD+ programs in order to quantify carbon benefits for individual conservation projects.
https://verra.org/project/jurisdictional-and-nested-redd-framework/

WWF High Conservation Value Forests: This website provides information describing the underlying concept of High Conservation Value forests.
http://wwf.panda.org/?93560/High-Conservation-Value-Forests-The-concept-in-theory-and-practice

Definitions

Cut-off dates: The point in time after which organizations cannot have engaged in unsustainable practices.

Deforestation: The direct human-induced conversion of forested land to non-forested land.

Ecologically sensitive regions: Include but are not limited to High Conservation Value Areas, Protected Areas, and World Wildlife Fund's Priority 200 Ecoregions.

Forest: An area of land that is dominantly covered by trees and that is established naturally or by management activities such as planting or seeding. It does not include land areas that are predominantly under agricultural or urban land use. It includes Primary forest and Secondary forest.

High Carbon Stock (HCS) forest: Forest areas with a significant amount of carbon stored within the vegetation and soil. Burning and clearing HCS forests releases stored carbon as greenhouse gas emissions. Different initiatives have set thresholds for identifying High Carbon Stock forests.

High Conservation Value (HCV) forest: Forested areas that support natural concentrations and distribution of species including significant species and ecosystems (e.g., endemic or endangered species, refuges), provide the basic services of nature in critical conditions (e.g., watershed protection, erosion control), and are fundamental to meeting the basic needs and traditional cultural identity of local communities.

Land conversion: The human-induced change of the prevailing physical and ecological conditions of an area of land to facilitate a new use or function. Examples include conversion of forests for pasture; conversion of native grasslands or other ecosystems for crop production, grazing, or other uses; conversion of farmland for urban development; and draining marshes or wetlands to create dry land.

Native ecosystems: Lands that have not been previously cultivated, cleared, drained or otherwise irrevocably altered that retain a dominant and characteristic native community of living organisms (as opposed to invasive or introduced species) which collectively function to provide unique value and services.

Non-forest: An area of land that is no longer dominated by trees.

Primary forest: A forest that has never been logged or cut and has developed following natural disturbances and under natural processes, regardless of its age.

Secondary forest: A forest that has been logged and has recovered naturally or artificially. It also includes degraded forest which is a secondary forest that has lost, through human activities, the structure, function, species composition or productivity normally associated with a natural forest type expected on that site.

Hotspots Addressed

6. *Land transformation – On-farm*

4. FERTILIZER APPLICATION – ON-FARM

Question

What was the nitrogen use intensity and phosphorus surplus associated with fertilizer application on the fields where your crops were produced?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following for our crop supply:
  - **B1.**_____ kg nitrogen per metric tonne of crop harvested.
  - **B2.**_____% of our crop supply, by mass, is represented by the number reported in B1.
  - **B3.**_____ kg phosphorus surplus per metric tonne of crop harvested.
  - **B4.**_____% of our crop supply, by mass, is represented by the number reported in B3.

Guidance

Calculation & Scope

Calculate B1 as the average of the most recent nitrogen (N) use intensities for the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate N use intensity as the mass of N applied, divided by the mass of crop harvested. Include all N applied with organic and synthetic fertilizers, as well as N applied with irrigation water, from the end of the harvest of the previous crop through the harvest of the crop that produced your supply. Include N applied to a non-harvested cover crop grown between both harvests. Exclude N deposition from the atmosphere.

For conversion purposes, 1 lb = 0.454 kg, 1 short ton = 0.907 metric tonnes, and 1 cwt = 0.051 metric tonnes. To convert bushels from volume to weight, see the USDA Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products, listed in the Background Information.

Calculate B3 as the average of the most recent phosphorus (P) surpluses for the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate P surplus as the mass of P applied minus the mass of P recommended, divided by the mass of crop harvested. Soil test results should be used to determine the amount of recommended P. Recommendations may be provided directly by soil test labs or by extension agents, certified crop consultants, or similar entities. Include all P applied with organic and synthetic fertilizers, from the end of the harvest of the previous crop through the harvest of the crop that produced your supply, and P applied to a non-harvested cover crop grown between both harvests. Data reported in phosphorus pentoxide (P2O5) should be converted to P as follows: 1 kg P2O5 = 0.436 kg P.

If primary farm data are unavailable for any of your supply, you may use a regional estimate to answer B1 and B3. Do not combine primary data and regional estimates. To answer B1 and B3 using regional estimates, you should only use estimates from a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department) where the crop is grown. A regional estimate must be based on a study that is representative of the production system of this crop supply, based on production data not older than 3 years before the harvest date of this supply, and published in a publicly available document.

Calculate B2 and B4 as the mass of your crop supply for which you were able to obtain primary data, divided by the total mass of your crop supply, then multiply by 100. If you have reported a regional estimate for B1 and B3, then report 0% for B2 and B4.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

To calculate N use intensity and P surplus, use one of the tools listed below or farm management software. If using the Cool Farm Tool, convert data reported as phosphorus pentoxide (P2O5) to P using the conversion factor listed above. Note that the Cool Farm Tool does not provide information about recommended P; this data will need to be obtained from other sources. THESIS Fertilizer Application KPI Calculation Tool can also assist in your N use intensity and P surplus calculations. See Certifications, Standards, and Tools below. If not using one of these tools, base your calculations on the “Nitrogen Use” metric and “Phosphorus Use” metric guidelines given by the Stewardship Index for Specialty Crops (SISC), listed in the Background Information.

Certifications, Standards & Tools

Cool Farm Tool: This calculator is available globally and calculates greenhouse gas emissions associated with farms, processing facilities, and transportation for many agriculture and livestock products.
http://www.coolfarmtool.org/CoolFarmTool

THESIS Help Center Video: Fertilizer Application – On-farm KPI: Short video tutorial on the Fertilizer Application – On-farm KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529551750

Background Information

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

SAI Platform: Sustainable Performance Assessment (SAI-SPA): The SAI Platform provides fact sheets and guidelines for sustainable agriculture assessment including metrics.
https://saiplatform.org/our-work/

Stewardship Index for Specialty Crops (SISC): SISC provides guidance for calculating irrigation water use, energy use, nitrogen use, phosphorus surplus, and soil organic matter on U.S. specialty crop farms.
https://www.stewardshipindex.org/

Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products: This publication provides information on agricultural commodity weights and measures.
https://www.ers.usda.gov/publications/pub-details/?pubid=41881

Definitions

Cover crops: A crop planted to improve or maintain soil, water and biodiversity quality, and to help control pests and disease of agricultural fields.

Fertilizer: Any material of natural or synthetic origin that is applied to soils or to plant tissues (usually leaves) to supply one or more plant nutrients essential to the growth of plants.

Organic fertilizers: Fertilizers derived from animal or vegetable matter. Examples include peat, animal waste (manure or other wastes), plant waste from agriculture, and sewage sludge.

Synthetic fertilizers: Fertilizers produced by chemical synthesis from inorganic starting materials.

Hotspots Addressed

4. *Fertilizer application – On-farm*

5. GREENHOUSE GAS EMISSIONS INTENSITY – ON-FARM

Question

What was the greenhouse gas emissions intensity associated with the farming operations that produced your crop supply?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following for our crop supply:
  B1._____ kg CO2e per metric tonne of crop harvested.
  B2._____% of our crop supply, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

Calculate B1 as the average of the most recent greenhouse gas (GHG) emissions intensity estimates for the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate GHG emissions intensity as the mass of all GHGs emitted, divided by the mass of crop harvested. Include the crop grown between the end of the harvest of the previous crop through the harvest of the crop that produced your supply.

For conversion purposes, 1 lb = 0.454 kg, 1 short ton = 0.907 metric tonnes, and 1 cwt = 0.051 metric tonnes. To convert bushels from volume to weight, see the USDA Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products, listed in the Background Information.

If primary farm data are unavailable for any of your supply, you may use a regional estimate to answer B1. Do not combine primary data and regional estimates. To answer B1 using regional estimates, you should only use estimates from a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department) where the crop is grown. A regional estimate must be based on a study that is representative of the production system of this crop supply, based on production data not older than 3 years before the harvest date of this supply, and published in a publicly available document.

Calculate B2 as the mass of your crop supply for which you were able to obtain primary data, divided by the total mass of your crop supply, then multiply by 100. If you have reported a regional estimate for B1, then report 0% for B2.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

To calculate GHG emissions intensity, use one of the tools listed in Certifications, Standards, and Tools below. If not using the tools listed here, base your calculations on the guidelines given in the SAI Platform Sustainable Performance Assessment or in PAS2050:2011, listed in the Background Information.

Certifications, Standards & Tools

COMET-Farm: COMET-Farm is a tool that helps farmers and ranchers determine the greenhouse gas emissions associated with their farming and ranching practices. The tool includes alternative future management scenarios and determines changes in greenhouse gas emissions and carbon relative to the current management scenario.
http://cometfarm.nrel.colostate.edu/

Cool Farm Tool: This calculator is available globally and calculates greenhouse gas emissions associated with farms, processing facilities, and transportation for many agriculture and livestock products.
http://www.coolfarmtool.org/CoolFarmTool

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Field to Market's Fieldprint Platform: Utilized by Insight and Innovation Projects enrolled in Field to Market's Continuous Improvement Accelerator, the Fieldprint Platform calculates and aggregates field-level outcomes for land use efficiency, soil conservation, irrigation water use efficiency, energy use efficiency, and greenhouse gas emissions for U.S. alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat farms. It also provides index scores for soil carbon, nitrogen and phosphorus impacts on water quality, and biodiversity at the field and farm level. The Platform offers an optional module to quantify soil carbon estimates if projects wish to calculate sequestration alongside avoided emissions. In addition, farmers have the ability to compare individual sustainability performance against project, state, and national benchmarks to assess opportunities for continuous improvement.
https://fieldtomarket.org/our-programs/fieldprint-platform/

Grow Asia Counter: This tool estimates how changes in management practices impact the greenhouse gas emissions associated with production of cocoa, coffee, tea, corn, rice, potatoes, and horticultural products in Cambodia, Indonesia, Myanmar, Philippines, and Vietnam.
http://counter.growasia.org/

THESIS Help Center Video: Greenhouse Gas Emissions Intensity – Growing Operations KPI: Short video tutorial on the Greenhouse Gas Emissions Intensity – Growing Operations KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/448646995

Background Information

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

PAS 2050:2011: According to BSI, "PAS 2050:2011 is a publicly available specification (PAS) providing a method for assessing the life cycle greenhouse gas (GHG) emissions of goods and services (jointly referred to as "products")."
https://shop.bsigroup.com/Browse-By-Subject/Environmental-Management-and-Sustainability/PAS-2050/

SAI Platform: Sustainable Performance Assessment (SAI-SPA): The SAI Platform provides fact sheets and guidelines for sustainable agriculture assessment including metrics.
https://saiplatform.org/our-work/

Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products: This publication provides information on agricultural commodity weights and measures.
https://www.ers.usda.gov/publications/pub-details/?pubid=41881

Definitions	**CO2e:** Carbon dioxide equivalent; a metric that expresses the impact of a greenhouse gas in terms of the amount of carbon dioxide (CO2) that has the same global warming potential. **Farming operation:** An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products. **Greenhouse gas:** Gases that contribute to the greenhouse effect by absorbing infrared radiation in the atmosphere, e.g., carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.
Hotspots Addressed	***3.*** *Energy consumption – On-farm* ***4.*** *Fertilizer application – On-farm* ***8.*** *Soil management – On-farm*

6. IRRIGATION WATER USE INTENSITY – ON-FARM

Question

What was the irrigation water use intensity associated with the farming operations that produced your crop supply?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following for our crop supply:
  B1._____ cubic meters of irrigation water use per metric tonne of crop harvested.
  B2._____% of our crop supply, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

Calculate B1 as the average of the most recent irrigation water use intensity estimates for the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate irrigation water use intensity as the volume of irrigation water applied, divided by the mass of crop harvested. Include the crop grown between the end of the harvest of the previous crop through the harvest of the crop that produced your supply. Methods of obtaining irrigation water use data include, but are not limited to, flow meters, measurements with rain gauges, estimates based on the effective precipitation rate of the sprinklers used, irrigation district reporting, pressurized pipes, or extrapolation from power records.

For conversion purposes, 1 U.S. acre-inch = 102.8 cubic meters or 10.3 hectare-mm, 1 gallon = 0.0038 cubic meters, 1 litre = 0.001 cubic meters, 1 kg = 0.001 metric tonnes, 1 short ton = 0.907 metric tonnes, and 1 cwt = 0.051 metric tonnes. To convert bushels from volume to weight, see the USDA Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products, listed in the Background Information.

If primary farm data are unavailable for any of your supply, you may use a regional estimate to answer B1. Do not combine primary data and regional estimates. To answer B1 using regional estimates, you should only use estimates from a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department) where the crop is grown. A regional estimate must be based on a study that is representative of the production system of this crop supply, based on production data not older than 3 years before the harvest date of this supply, and published in a publicly available document.

Calculate B2 as the mass of your crop supply for which you were able to obtain primary data, divided by the total mass of your crop supply, then multiply by 100. If you have reported a regional estimate for B1, then report 0% for B2.

If no irrigation water was used to produce any portion of your crop supply, enter “0” for B1 and 100% for B2.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Irrigation water use intensity can be calculated directly from farm data or by one of the tools listed below. If using Field to Market’s Fieldprint Platform, calculate your response to B1 using information from the Platform’s “Water applied” data field. The conversion factors listed above will be necessary to complete your calculation. The Fieldprint Platform’s Irrigation Water Use metric results should not be used directly to answer this question due to differences in calculation methodology. For a list of crops currently covered by Field to Market, refer to the description of Field to Market’s Fieldprint Platform below. If using the Cool Farm Tool, report data from the “Blue water” results field only. Do not use data from the “Total water” or “Green water” results fields. If not using the tools listed here, base your calculations on the “Applied Water Use Efficiency” metric guidelines given by the Stewardship Index for Specialty Crops (SISC), listed in the Background Information.

Certifications, Standards & Tools

Cool Farm Tool: This calculator is available globally and calculates greenhouse gas emissions associated with farms, processing facilities, and transportation for many agriculture and livestock products.
http://www.coolfarmtool.org/CoolFarmTool

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Field to Market's Fieldprint Platform: Utilized by Insight and Innovation Projects enrolled in Field to Market's Continuous Improvement Accelerator, the Fieldprint Platform calculates and aggregates field-level outcomes for land use efficiency, soil conservation, irrigation water use efficiency, energy use efficiency, and greenhouse gas emissions for U.S. alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat farms. It also provides index scores for soil carbon, nitrogen and phosphorus impacts on water quality, and biodiversity at the field and farm level. The Platform offers an optional module to quantify soil carbon estimates if projects wish to calculate sequestration alongside avoided emissions. In addition, farmers have the ability to compare individual sustainability performance against project, state, and national benchmarks to assess opportunities for continuous improvement.
https://fieldtomarket.org/our-programs/fieldprint-platform/

THESIS Help Center Video: Irrigation Water Use Intensity - On-farm KPI: Short video tutorial on the Irrigation Water Use Intensity - On-farm KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/531017121

Background Information

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

SAI Platform: Sustainable Performance Assessment (SAI-SPA): The SAI Platform provides fact sheets and guidelines for sustainable agriculture assessment including metrics.
https://saiplatform.org/our-work/

Stewardship Index for Specialty Crops (SISC): SISC provides guidance for calculating irrigation water use, energy use, nitrogen use, phosphorus surplus, and soil organic matter on U.S. specialty crop farms.
https://www.stewardshipindex.org/

Water Footprint Network: Waterfootprint.org provides various tools, assessments, and information regarding water consumption accounting.
https://waterfootprint.org/en/

Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products: This publication provides information on agricultural commodity weights and measures.
https://www.ers.usda.gov/publications/pub-details/?pubid=41881

World Resources Institute (WRI) Aqueduct Measuring and Mapping Water Risk: WRI created the global water risk mapping tool, Aqueduct, which used 12 indicators to map where and how water risks and opportunities occur globally.
https://www.wri.org/aqueduct

Definitions	**Farming operation:** An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products. **Irrigation water use:** Total withdrawals from municipal and private water providers, surface water, groundwater, or wells for purposes of crop irrigation. Collected rainwater is not included.
Hotspots Addressed	***9.*** *Water use - On-farm*

7. LABOR RIGHTS - ON-FARM

Question

How did your organization manage labor rights risks in the operations that produced your crop supply?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following:

B1._____% of our crop supply, by mass, was produced in operations that were covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining.

B2._____% of our crop supply, by mass, was produced in operations that were reviewed by a risk assessment which identifies high-risk areas for labor rights abuses.

B3._____% of our staff responsible for procurement activities have been trained on labor rights issues in the supply chain.

B4._____% of our staff responsible for procurement activities have been evaluated via performance metrics on labor rights improvements in the supply chain.

B5._____% of our crop supply, by mass, was produced in operations that were low risk, that were high risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years.

Guidance

Calculation & Scope

Calculate B1 as the mass of your crop supply that is covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining, divided by the total mass of your crop supply, then multiply by 100. Where freedom of association and collective bargaining are restricted by law, employers can use other forms of non-union employee representation and relations to respect this aspect of workers' rights.

Calculate B2 as the mass of your crop supply that has been reviewed by a risk assessment which identifies high-risk areas for labor rights abuses, divided by the total mass of your crop supply, then multiply by 100.

To be included in B2, a risk assessment must have been conducted by second or third parties and must have been conducted at least once every three years using a standard based on internationally recognized principles. The risk assessments and standard must be verifiable and must address labor rights abuses such as discrimination on grounds of gender, age, ethnicity or disability, physical violence, sexual harassment and abuse, child labor, forced labor, and freedom of association and collective bargaining or any other range of behaviors and practices as outlined by internationally-recognized labor standards. The standards and websites listed in Background Information below may be helpful for conducting your risk assessment(s) and for understanding appropriate corrective actions which can inform your responses.

In addition, to determine if an operation is in a high-risk area for labor rights abuses, you may utilize a country risk analysis tool. The tool should measure the strength of a country's ability to govern and enforce laws, regulations, and internationally recognized principles. The country risk assessment may be a first party systematic risk assessment, or external risk analyses tools may be utilized. The AMFORI Countries' Risk Classification tool listed below may be used to inform your response. The country risk assessment can be complemented with risks associated with specific activities, regions, and suppliers.

Calculate B3 as the number of staff responsible for procurement activities that have been trained on labor rights issues in the supply chain, divided by the total number of staff responsible for procurement activities, then multiply by 100. Include both full-time and contracted employees. The training must be verifiable. Staff training should cover child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Staff training should be renewed as appropriate to maintain competency and implementation of good practices for labor rights issues and to prevent training exhaustion. Additional staff training may be required to perform job duties.

Calculate B4 as the number staff responsible for procurement activities that have been evaluated via performance metrics on labor rights improvements in the supply chain, divided by the total staff responsible for procurement activities, then multiply by 100. Evaluation on labor rights should include, child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Examples of improvements include decreased incidence of child labor, forced labor, or discrimination, or an Increased worker participation in collective bargaining.

Calculate B5 as the mass of your crop supply that was produced in operations that were low risk, that were high risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years, divided by the total mass of your crop supply, then multiply by 100. To be included in B5, audits must be verifiable and address child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Examples include, but are not limited to, principles outlined by the United Nations Global Compact, the International Labour Organization Declaration on Fundamental Principles and Rights at Work. Where freedom of association & collective bargaining is restricted by law, employers can use other forms of non-union employee representation and relations to respect this aspect of workers' rights. Audits should be conducted by second or third parties at least once every three years, or more often depending on the requirements of the standard organization See the Certifications, Standards & Tools for more information. Government regulations or parties in the supply chain may initiate these audits.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question. Audits must have been conducted in the 36 months prior to the end of the 12-month period.

Certifications, Standards & Tools

Amfori BSCI Code of Conduct: This global business association for open and sustainable trade, empowers members worldwide by monitoring and improving social performance in their supply chains. It offers tools to carry out human rights due diligence – identifying and mitigating any risks in supply chains and supporting remedial action.
https://www.amfori.org/sites/default/files/amfori%20BSCI%20Brochure-compressed.pdf

Amfori Country Risk Classification: This list classifies countries' risk of social injustice in an effort to assist companies in determining high and low risk for their sourcing and operations.
http://duediligence.amfori.org/CountryRiskClassification

Fair for Life Certification Program: The Fair Life program provides certification for fair trade and responsible supply chains. The goal of Fair for Life is to ensure social and economic benefits to socioeconomically disadvantaged agricultural producers and workers and to ensure that smallholder producers receive a fair share.
http://www.fairforlife.org/

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

SA8000® Standard: Social Accountability International (SAI) is a global non-governmental organization that aims to advance human rights at work via the SA8000® Standard. SA 8000 measures social performance in eight areas that are relevant for workplaces in factories and organizations worldwide.
https://sa-intl.org/programs/sa8000/

Sedex Members Ethical Trade Audit: Sedex Members Ethical Trade Audit is an auditing system that aligns with Ethical Trading Initiative's Base Code as well International Labour Organization Conventions. It has been developed to provide a public auditing methodology and format for companies to use to assess compliance.
https://www.sedex.com/our-services/smeta-audit/

Background Information

CSR Europe. Blueprint for Embedding Human Rights in Key Company Functions: The purpose of this blueprint is to provide practical support to CSR and human resource managers on how to embed human rights in the company with the aim to reduce risks for the company.
https://humanrights.wbcsd.org/project/blueprint-for-embedding-human-rights-in-key-company-functions/

GlobalG.A.P. Risk Assessment on Social Practice (GRASP): GRASP is an add-on module for GLOBALG.A.P. developed to assess social practices on the farm, addressing specific aspects of workers' health, safety and welfare, and labor rights.
https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/grasp/

International Labour Organization Declaration on Fundamental Principles and Rights at Work: This declaration outlines the universal rights of all workers regardless of citizenship status, gender, or the local level of economic development.
http://www.ilo.org/declaration/lang–en/index.htm

International Labour Organization defines Gender Equality/Discrimination: Every worker has the right to be treated fairly and to have access to equal opportunities regardless of their gender, sexual orientation, age, marital status, and religious and political beliefs. In addition, each worker should be free to decide where to work, and when to terminate the working relationship. To facilitate equality, it is important that a variety of workers are actively involved in decision making. This can be stimulated through workers organizations, unions, workers surveys, hotlines, and employers organizations.
http://www.ilo.org/global/topics/dw4sd/themes/gender-equality/lang–en/index.htm

IS0 26000 Social Responsibility: ISO 2600 is not a certification tool, but it offers guidance about social responsibility to all sorts of organizations regardless of their activity, size or location.
https://www.iso.org/iso-26000-social-responsibility.html

Social Accountability International Guidance Document for Social Accountability 8000: According to Social Accountability International, "this guidance document provides various tools and information for users of the Social Accountability 8000 standard, including definitions, background information, and examples."
https://sa-intl.org/wp-content/uploads/2020/02/SA8000-2014-Guidance-Document.pdf

United Nations Global Compact Human Rights and Business Dilemmas Forum: United Nations Global Compact Human Rights and Business Dilemmas Forum present an introduction to, analysis of, and business recommendations for minimizing social sustainability risks in the supply chain.
https://www.unglobalcompact.org/library/9

United Nations Global Compact Self-Assessment Tool on Human Rights: This tool can be used by organizations to assess human rights performance against international standards, conventions and agreements. It also provides suggestions for continuous improvement.
https://globalcompactselfassessment.org/humanrights

Definitions

Collective bargaining: According to the ILO this is a key means through which employers and their organizations and trade unions can establish fair wages and working conditions and ensure equal opportunities between women and men.

Corrective actions: Prompt actions taken to eliminate the causes of a problem, thus preventing their recurrence.

Discrimination: Discrimination is defined under ILO Convention No. 111 as any distinction, exclusion or preference made on the basis of race, color, sex, religion, political opinion, national extraction or social origin (among other characteristics), "which has the effect of nullifying or impairing equality of opportunity and treatment in employment or occupation".

First party audit: A first party audit is conducted by the organization itself for management review and other internal purposes and may form the basis for an organization's declaration of conformity.

First party systematic risk assessment: A first party systematic risk assessment is conducted by the organization itself for management review and other internal purposes and may form the basis for an organization's declaration of conformity.

Forced labor: Any task or service performed by a person against their will or under threat of negative consequence. Forced labor includes debt bondage, human trafficking, withholding of wages or identity papers, threats of violence, unreasonable restriction of movement, and exploitation of marginalized workers.

Freedom of association: The right of workers to join or form trade union or other worker organizations of their choosing/or refrain from doing so/and could bargain collectively without fear of retaliation or repercussion as long as it not contrary to local law.

Freedom of collective bargaining: The right to negotiate the conditions of employment as a group rather than individually without fear of repercussions.

Internationally-recognized labor principles: Internationally-recognized labor principles include the United Nations Global Compact and International Labour Organization Declaration on Fundamental Principles and Rights at Work or equivalent.

Labor rights: The universal rights of workers, regardless of race, gender, nationality, or other distinguishing characteristic. These include protection from the worst forms of child labor, forced labor, and discrimination, as well as freedom of association and collective bargaining as outlined by the United Nations Global Compact or the International Labour Organization Declaration on Fundamental Principles and Rights at Work.

Risk assessment: A systematic process to evaluate potential risks within an operation, system, or supply chain. It can include an on-site audit by a second party or third party or a country risk classification analysis that judges the site risk due to prevailing conditions, controls, or other mitigating factors.

Second-party audit: An audit conducted by a party having an interest in the organization, such as customers, or by another entity on their behalf.

Staff responsible for procurement activities: All both full-time and contracted employees responsible for attaining raw materials, parts, components, products and services at a facility that are being evaluated via KPIs on labor rights improvements in the supply chain.

Third-party audit: An audit conducted by external, independent auditing organizations, such as those providing certification of conformity to a standard.

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Worst forms of child labor: Labor that negatively affects a child's health, safety, morals, or reasonable ability to receive an education. This includes forced labor, prostitution or pornography, labor for illicit activities, and hazardous work. Hazardous work activities include work that is abusive, work underground, underwater, at dangerous heights or in confined spaces, work with dangerous machinery and tools, work with heavy loads, work involving hazardous substances and environments, work for long hours, work at night, or work in which the worker is unreasonably restricted from movement outside the premises.

Hotspots Addressed	***5.*** *Labor rights – On-farm*

8. PESTICIDE APPLICATION – ON-FARM

Question

What percentage of your crop supply, by mass, was provided by farming operations that had a verifiable, site-based environmental, health, and safety (EHS) program to assess and manage impacts to humans and the environment from pesticides and that shared data on their pesticide use?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following percentages for our crop supply:
  B1._____% of our crop supply, by mass, was provided by farming operations that had a verifiable EHS program to assess and manage impacts to humans and the environment from pesticides.
  B2._____% of our crop supply, by mass, was provided by farming operations that shared data on their pesticide use.

Guidance

Calculation & Scope

Calculate B1 as the mass of your crop supply sourced from farms that have a verifiable EHS program, divided by the total mass of your crop supply, then multiply by 100. Site-based EHS programs must address the protection of workers and the surrounding community from potential negative health effects related to pesticide use (e.g., toxicity from handling chemicals or exposure from drift). EHS programs must also address environmental impacts related to pesticide use, such as soil and water toxicity and death of non-target organisms (e.g., insects, birds, mammals, soil microbes, etc.). For more information about EHS programs related to pesticide use, refer to the certifications and Background Information listed below. Crop supply for which it can be verified that all applied pesticides were used in compliance with a national and/or local regulatory body (for supply produced in the U.S.) or with World Health Organization, United Nations, Food and Agriculture Organization, European, or U.S. standards (for supply produced outside of the U.S.) may be included in your response for B1. In B1, you may include your crop supply that has been certified by any of the certifications listed in the Certifications, Standards & Tools section below. In addition, for supply coming from developing countries, TSC's Responsible Pest Management (RPM) Framework may be used to inform your response in B1 by including % of your supply from developing countries scoring Medium or High on RPM's Drivers Risk management and Worker and Neighbor protections. For more information about RPM and its Outcomes and Drivers, see below under Certifications, Standards & Tools.

Calculate B2 as the mass of your crop supply sourced from farms that shared data on their pesticide use, divided by the total mass of your crop supply, then multiply by 100. Pesticide use data includes crop name, pesticide name, date of application, dosage, and any other relevant information that encourages dialogue between producers and suppliers regarding pesticide management. In addition, TSC's Responsible Pest Management (RPM) Framework may be used to inform your response for B2 by including % of your supply sharing information on RPM's Driver Recordkeeping. For more information about RPM and its Outcomes and Drivers, see below under Certifications, Standards & Tools.

For B1 and B2, include all farms, regardless of whether they are certified organic, certified under an ecological farming program, use biological and/or plant-derived pesticides, or do not use pesticides.

Because both response options may be relevant to the same portion of your crop supply, you may respond with up to 100% for both B1 and B2. For example, supply included in the calculation of B1 can also be included in the calculation of B2 if appropriate.

Perform this calculation using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

AB Agriculture Biologique France: A French organic certification that sets EU and French organic farming standards and import and inspection requirements, as well as labelling rules and a logo.
https://agriculture.gouv.fr/lagriculture-biologique-ab

EKO: EKO is a Dutch label for organic food products that guarantees that the production takes place in an environmentally friendly manner.
https://www.eko-keurmerk.nl/

EU Organic: The European Union has a regulatory framework that sets EU organic farming standards and import and inspection requirements, as well as labelling rules and a logo.

http://ec.europa.eu/agriculture/organic/

Fair for Life Certification Program: The Fair Life program provides certification for fair trade and responsible supply chains. The goal of Fair for Life is to ensure social and economic benefits to socioeconomically disadvantaged agricultural producers and workers and to ensure that smallholder producers receive a fair share.
http://www.fairforlife.org/

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

SAI Platform – Farm Sustainability Assessment (SAI-FSA): The SAI Platform Farm Sustainability Assessment (SAI-FSA) is an easy-to-use tool that assesses farm environmental, social, and economic sustainability. The FSA is based on SAI Platform's Principles and Practices for sustainable agriculture and can be used by farmers as a benchmarking tool for comparing various certification schemes and proprietary codes.
http://www.fsatool.com/

THESIS Help Center Video: Pesticide Application – Growing Operations KPI: Short video tutorial on the Pesticide Application – Growing Operations KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529550783

TSC Responsible Pest Management (RPM) Framework: The RPM Framework is an innovative, science-based multi-stakeholder-developed approach for measuring RPM in crop production to enable improved communication throughout the value chain.
https://www.sustainabilityconsortium.org/responsible-pest-management-rpm-framework/

USDA Organic: The U.S. Department of Agriculture (USDA) has a regulatory framework that sets USDA organic farming standards and import and inspection requirements, as well as labelling rules and a logo. USDA Organic is a consumer-facing label that indicates that food products have been produced through approved methods that integrate cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.
https://www.usda.gov/topics/organic

Background Information

SAI Platform: Sustainable Performance Assessment (SAI-SPA): The SAI Platform provides fact sheets and guidelines for sustainable agriculture assessment including metrics.
https://saiplatform.org/our-work/

Definitions

Developing countries: Countries with little industrial and economic activity and where people generally have low incomes. Developing countries include all countries other than industrialized countries and countries in transition, namely: all countries in Africa except South Africa, all countries in Asia except Israel and Japan, all countries in Oceania except Australia and New Zealand, and all countries in North and Central America except Canada, USA and Mexico, and all countries in South America except Brazil and Chile.

Farming operation: An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products.

Pesticide: A substance or mixture of substances used to prevent, destroy, or control a pest (e.g., weeds, fungi, bacteria, unwanted animal species) that are harmful to or interfere with the production, processing, storage, transport, or marketing of agricultural products.

Program: An annually updated document that farmers can demonstrate on-site. The program should summarize concrete goals and a plan for how to achieve these goals.

	Site-based environmental health, and safety program: A program that seeks to protect workers, communities and the environment by accounting for the specific conditions and circumstances of each physical site or facility. **Verifiable:** Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim. **Verified:** Having previously demonstrated, through a reputable assessor, the truth or accuracy of a claim.
Hotspots Addressed	***7.*** *Pesticide application – On-farm*

9. SOIL EROSION – ON-FARM

Question

How much soil erosion was associated with the farming operations that produced your crop supply?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following for our crop supply:

B1._____ metric tonnes of soil erosion per metric tonne of crop harvested.

B2._____% of our crop supply, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

Calculate B1 as the average of the most recent soil erosion estimates from the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate soil erosion as the estimated mass of soil eroded from production fields due to wind or water flow, divided by the mass of crop harvested. Include the crop grown between the end of the harvest of the previous crop through the harvest of the crop that produced your supply.

For conversion purposes, 1 short ton = 0.907 metric tonnes. To convert bushels from volume to weight, see the USDA Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products, listed in the Background Information.

If primary farm data are unavailable for any of your supply, you may use a regional estimate to answer B1. Do not combine primary data and regional estimates. To answer B1 using regional estimates, you should only use estimates from a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department) where the crop is grown. A regional estimate must be based on a study that is representative of the production system of this crop supply, based on production data not older than 3 years before the harvest date of this supply, and published in a publicly available document.

Calculate B2 as the mass of your crop supply for which you were able to obtain primary data, divided by the total mass of your crop supply, then multiply by 100. If you have reported a regional estimate for B1, then report 0% for B2.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Soil erosion estimates can be calculated from field-specific data, using the tools listed below, or derived from regional soil erosion data based on crop type and growing location. If using Field to Market's Fieldprint Platform to determine soil erosion estimates, refer to the description of Field to Market's Fieldprint Platform below for a list of crop types currently covered. Models that use USDA RUSLE2 or USDA WEPS estimate soil erosion based on field and soil properties, tillage method, crop type, soil cover, and local climate. For more information, refer to the Revised Universal Soil Loss Equation (USDA RUSLE2) and Wind Erosion Prediction System (USDA WEPS), listed in Background Information.

Certifications, Standards & Tools

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Field to Market's Fieldprint Platform: Utilized by Insight and Innovation Projects enrolled in Field to Market's Continuous Improvement Accelerator, the Fieldprint Platform calculates and aggregates field-level outcomes for land use efficiency, soil conservation, irrigation water use efficiency, energy use efficiency, and greenhouse gas emissions for U.S. alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat farms. It also provides index scores for soil carbon, nitrogen and phosphorus impacts on water quality, and biodiversity at the field and farm level. The Platform offers an optional module to quantify soil carbon estimates if projects wish to calculate sequestration alongside avoided emissions. In addition, farmers have the ability to compare individual sustainability performance against project, state, and national benchmarks to assess opportunities for continuous improvement.
https://fieldtomarket.org/our-programs/fieldprint-platform/

THESIS Help Center Video: Soil Erosion – Growing Operations KPI: Short video tutorial on the Soil Erosion – Growing Operations KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529539438

Background Information

European Integrated Farming Framework: The European Integrated Farming Framework, developed by the European Initiative for Sustainable Development in Agriculture, is a set of guidelines and suggested practices for sustainable agricultural production. The framework addresses human and social capital; energy efficiency; water use and protection; climate change and air quality; soil management; crop nutrition; crop health and protection; animal husbandry, health, and welfare; landscape and nature conservation; and waste management and pollution control.
http://sustainable-agriculture.org/integrated-farming/

GLOBALG.A.P.: GLOBALG.A.P. offers farm management certification for crops (fruits and vegetables, flowers and ornamentals, combinable crops, green coffee, and tea); livestock (cattle and sheep, dairy, calf and young beef, pigs, poultry, and turkey); aquaculture; chain of custody; plant propagation material; compound feed manufacturing; and livestock transport. The program also includes a risk assessment for worker health, safety, and welfare, as well as criteria for animal welfare and food safety.
https://www.globalgap.org/uk_en/

SAI Platform: Sustainable Performance Assessment (SAI-SPA): The SAI Platform provides fact sheets and guidelines for sustainable agriculture assessment including metrics.
https://saiplatform.org/our-work/

USDA RUSLE2 Technology: The Revised Universal Soil Loss Equation, Version 2 (RUSLE2) is a tool developed by the United States Department of Agriculture (USDA) for calculating soil erosion. Although it was developed by the USDA, RUSLE2 is commonly used outside of the US.
http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm

USDA WEPS: The Wind Erosion Prediction System is a tool developed by the United States Department of Agriculture (USDA) to estimate the risk of soil erosion by wind. Although it was developed by the USDA, WEPS is adaptable to regions outside of the U.S.
https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/

Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products: This publication provides information on agricultural commodity weights and measures.
https://www.ers.usda.gov/publications/pub-details/?pubid=41881

Definitions

Farming operation: An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products.

Soil erosion: The loss of soil from a field due to wind or surface water runoff.

Hotspots Addressed

8. *Soil management – On-farm*

10. WORKER HEALTH AND SAFETY – ON-FARM

Question

How did your organization manage worker health and safety risks in the operations that produced your crop supply?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following for our supply:

B1._____% of our crop supply, by mass, was produced in operations that have performed a risk assessment to identify high-risk areas for health and safety.

B2._____% of our crop supply, by mass, was produced in operations that train workers on health and safety procedures.

B3._____% of our crop supply, by mass, was produced in operations that implement a verifiable worker health and safety plan.

B4._____% of our crop supply, by mass, was produced in operations that have a worker health and safety performance monitoring system in place.

B5._____% of our crop supply, by mass, was produced in operations that were audited in the last three years on worker health and safety issues.

Guidance

Calculation & Scope

To be included in B1-B5, risk assessments, training programs, safety plans, performance monitoring systems, and audits must be verifiable and address health and safety issues such as worker injury and worker exposure to harmful elements. The assessments and audits must be conducted by second or third parties. The risk assessment must be conducted once per year while the audit must have been conducted at least once every three years, both using a standard based on internationally-recognized principles such as International Labour Organization Occupational Safety and Health Conventions (e.g., No. 155). The standards and websites listed in Background Information below may be helpful for conducting your risk assessment(s) and for understanding appropriate corrective actions, which can inform your responses. See the Certifications, Standards & Tools for examples of initiatives that meet these requirements.

Calculate B1 as the mass of your crop supply that came from operations that have performed a risk assessment to identify high risk areas for health and safety, divided by the total mass of your crop supply, then multiply by 100.

To determine if an operation is high risk for health and safety, you may utilize a country risk analysis tool. The tool should measure the strength of a country's ability to govern and enforce laws, regulations, and internationally recognized principles. The country risk assessment may be a first party systematic review assessment, or external risk analyses tools may be utilized. It must be conducted at least once per year. The country risk assessment can be complemented with risks associated with specific activities, regions, and suppliers.

Calculate B2 as the mass of your crop supply that came from operations that train workers on health and safety procedures, divided by the total mass of your crop supply, then multiply by 100. To be included in B2, the training on health and safety procedures must be available in the language of the employee, including migratory and seasonal workers, and must be renewed as appropriate to maintain competency and implementation of good practices for workers on health and safety procedures and to prevent training exhaustion. Additional worker training may be required to perform job duties. On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B3 as the mass of your crop supply that came from operations that implement a verifiable worker health and safety plan, divided by the total mass of your crop supply, then multiply by 100. To be included in B3, a worker health and safety plan must be verifiable and must be available in the language of the employee, including migratory and seasonal workers, and be prominently displayed in the workplace where employees normally report. The plan should include best practices specific to ergonomics; repetitive motions; chemical and particulate exposure; appropriate use of personal protective equipment (PPE); and proper use of tools, machinery, and the handling of animals (if applicable). On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B4 as the mass of your crop supply that came from operations that have a worker health and safety performance monitoring system in place, divided by the total mass of your crop supply, then multiply by 100. To be included in B4, a worker health and safety performance monitoring system should include metrics on issues including, but not limited to, incidence of worker injuries and prevalence of diseases. On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B5 as the mass of your crop supply that came from operations that were audited in the last three years on worker health and safety issues, divided by the total mass of your crop supply, then multiply by 100. Audits should be conducted by second or third parties at least once every three years, or more often depending on the requirements of the standard organization. See the Certifications, Standards & Tools for more information. Government regulations or parties in the supply chain may initiate these audits.

To be included in B5, the audits must be verifiable and address preventive measures, freely provided personal protective equipment, identification of worker health and safety hazards and effects on the exposed people, statistics and reasons behind injuries, design of work area, processes, installations, machinery/work equipment, operating processes and work organization, as outlined by internationally-recognized labor principles. Examples include, but are not limited to, principles outlined by the United Nations Global Compact, the International Labour Organization Standards on Occupational Health and Safety.

Certifications, Standards & Tools

Amfori Country Risk Classification: This list classifies countries' risk of social injustice in an effort to assist companies in determining high and low risk for their sourcing and operations.
http://duediligence.amfori.org/CountryRiskClassification

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

GlobalG.A.P. Risk Assessment on Social Practice (GRASP): GRASP is an add-on module for GLOBALG.A.P. developed to assess social practices on the farm, addressing specific aspects of workers' health, safety and welfare, and labor rights.
https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/grasp/

Recommended Practices for Safety and Health Programs: Defines and enforces standards for the safe and healthful working conditions for working men and women. OHSA also provides training, outreach education, and assistance. The OSHA tools can be used for self-evaluations, to compare elements and actions of different health and safety standards, to track implemented actions, identify remaining weaknesses, and strategies for continued improvement.
https://www.osha.gov/shpguidelines/explore-tools.html

SA8000® Standard: Social Accountability International (SAI) is a global non-governmental organization that aims to advance human rights at work via the SA8000® Standard. SA 8000 measures social performance in eight areas that are relevant for workplaces in factories and organizations worldwide.
https://sa-intl.org/programs/sa8000/

Sedex Members Ethical Trade Audit: Sedex Members Ethical Trade Audit is an auditing system that aligns with Ethical Trading Initiative's Base Code as well International Labour Organization Conventions. It has been developed to provide a public auditing methodology and format for companies to use to assess compliance.
https://www.sedex.com/our-services/smeta-audit/

THESIS Help Center Video: Worker Health and Safety – Growing Operations KPI: Short video tutorial on the Worker Health and Safety – Growing Operations KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529546577

Background Information

IS0 26000 Social Responsibility: ISO 2600 is not a certification tool, but it offers guidance about social responsibility to all sorts of organizations regardless of their activity, size or location.
https://www.iso.org/iso-26000-social-responsibility.html

Social Accountability International Guidance Document for Social Accountability 8000: According to Social Accountability International, "this guidance document provides various tools and information for users of the Social Accountability 8000 standard, including definitions, background information, and examples." https://sa-intl.org/wp-content/uploads/2020/02/SA8000-2014-Guidance-Document.pdf

United Nations Global Compact Human Rights and Business Dilemmas Forum: United Nations Global Compact Human Rights and Business Dilemmas Forum present an introduction to, analysis of, and business recommendations for minimizing social sustainability risks in the supply chain. https://www.unglobalcompact.org/library/9

Definitions

Corrective actions: Prompt actions taken to eliminate the causes of a problem, thus preventing their recurrence.

First party systematic risk assessment: A first party systematic risk assessment is conducted by the organization itself for management review and other internal purposes and may form the basis for an organization's declaration of conformity.

Program: An annually updated document that farmers can demonstrate on-site. The program should summarize concrete goals and a plan for how to achieve these goals.

Risk assessment: A systematic process to evaluate potential risks within an operation, system, or supply chain. It can include an on-site audit by a second party or third party or a country risk classification analysis that judges the site risk due to prevailing conditions, controls, or other mitigating factors.

Second-party audit: An audit conducted by a party having an interest in the organization, such as customers, or by another entity on their behalf.

Third-party audit: An audit conducted by external, independent auditing organizations, such as those providing certification of conformity to a standard.

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Worker exposure to harmful elements: Contact with potentially harmful chemical, physical, or biological elements that occurs as a result of one's job-related activities. Examples include chronic interaction with chemicals, dusts, radiation, environmental elements, allergens, noise, and vibrations.

Worker health and safety: Worker health and safety consists of worker injury and worker exposure to harmful elements. Please see the corresponding terms.

Worker injury: Physical damage to an individual due to a single act that causes immediate damage or repetitive acts that cause damage over time. Examples of causes of injury include repetitive motions, non-ergonomic motions, damage from use of tools and machinery, falls, and burns.

Hotspots Addressed

10. *Worker health and safety – On-farm*

11. YIELD – ON-FARM

Question

What was the average yield of your crop supply from farming operations?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following for our crop supply:
  B1._____ metric tonnes of crop supply harvested per hectare planted.
  B2._____% of our crop supply, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

Calculate B1 as the average of the most recent yield estimates from the farms that produced your crop supply, weighted by the mass of crop supplied by each farm. For each farm, calculate yield as the mass of crop harvested, divided by the hectares planted. If your current yield estimates are recorded as area planted per mass of crop harvested, take the inverse of each farm's metric and then calculate the average to report B1.

If primary farm data are unavailable for any of your supply, you may use a regional estimate to answer B1. Do not combine primary data and regional estimates. To answer B1 using regional estimates, you should only use estimates from a sub-country area such as an agricultural zone or region, eco-region, or geo-political boundary (e.g., state, county, department) where the crop is grown. A regional estimate must be based on a study that is representative of the production system of this crop supply, based on production data not older than 3 years before the harvest date of this supply, and published in a publicly available document.

Calculate B2 as the mass of your crop supply for which you were able to obtain primary data, divided by the total mass of your crop supply, then multiply by 100. If you have reported a regional estimate for B1, then report 0% for B2.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

If using data from Field to Market's Fieldprint Platform to respond to this KPI, refer to the description of Field to Market's Fieldprint Platform below for a list of crops currently covered.

Certifications, Standards & Tools

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Field to Market's Fieldprint Platform: Utilized by Insight and Innovation Projects enrolled in Field to Market's Continuous Improvement Accelerator, the Fieldprint Platform calculates and aggregates field-level outcomes for land use efficiency, soil conservation, irrigation water use efficiency, energy use efficiency, and greenhouse gas emissions for U.S. alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat farms. It also provides index scores for soil carbon, nitrogen and phosphorus impacts on water quality, and biodiversity at the field and farm level. The Platform offers an optional module to quantify soil carbon estimates if projects wish to calculate sequestration alongside avoided emissions. In addition, farmers have the ability to compare individual sustainability performance against project, state, and national benchmarks to assess opportunities for continuous improvement.
https://fieldtomarket.org/our-programs/fieldprint-platform/

THESIS Help Center Video: Yield – On-farm KPI: Short video tutorial on the Yield – On-farm KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/529542196

Background Information

Stewardship Index for Specialty Crops (SISC): SISC provides guidance for calculating irrigation water use, energy use, nitrogen use, phosphorus surplus, and soil organic matter on U.S. specialty crop farms.
https://www.stewardshipindex.org/

Definitions

Farming operation: An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products.

Hotspots Addressed

3. *Energy consumption – On-farm*

6. *Land transformation – On-farm*

12. GREENHOUSE GAS EMISSIONS INTENSITY – PROCESSING

Question

What was the greenhouse gas emissions intensity associated with final processing of your product?

Response Options

A. We are unable to determine at this time.

B. Our greenhouse gas emissions intensity was:

B1._____ kg CO2e per metric tonne of product.

B2._____% of our product, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

Included in the scope of this question are fuels combusted and electricity used in facilities that perform final processing activities, as well as trace gases released during processing. This may include some or all of your organization's corporate scope 1 and 2 emissions, as well as scope 1 and 2 emissions from any final processing facilities not within your organization's financial or operational control (e.g., contract processers). Excluded from the scope of this question are GHG allowances, offsets, and credits.

You may calculate B1 using product-specific data or estimate intensity via facility data that is not product specific. If using product-specific data, calculate B1 as the average of each product's greenhouse gas emissions intensity, weighted by the total mass produced of each product.

If using facility data, calculate B1 as the average of each final processing facility's greenhouse gas emissions intensity, weighted by the total mass of final product produced. If the processing facilities produce more than one category of product, only weight using the total mass of production specific to the product category in question.

Calculate B2 as the mass of final products for which you are able to obtain data, divided by total mass of final products produced, then multiply by 100. For each final processing facility, follow the instructions in the Greenhouse Gas Protocol Corporate Standard (2015) to calculate scope 1 and 2 greenhouse gas emissions generated from electricity purchased or produced, fuels combusted, and trace gases released, and then add them together. Worksheets are available on the GHG Protocol web site to facilitate these calculations.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

The data required for the CDP Climate Change 2020 Questionnaire combined with production data can be used to calculate your response (refer to C7.3b and C7.6b). The data required for "Disclosure 302-1 Energy consumption within the organization" in GRI 302: Energy 2016 or "Disclosure 305-1 Direct (Scope 1) GHG emissions" and "Disclosure 305-2 Energy indirect (Scope 2) GHG emissions" in GRI 305: Emissions 2016 can also be used to calculate your response.

Certifications, Standards & Tools

CDP Climate Change Questionnaire: The CDP Climate Change Questionnaire provides questions that assess a company's greenhouse gas emissions, goals, and management. The report provided by CDP provides the overview of the results from companies responding to the request.
https://www.cdp.net/en/guidance/guidance-for-companies

Greenhouse Gas Protocol: Calculation Tools: This site provides a list of sector toolsets developed by GHG Protocol, third-party databases, and other tools based on the GHG Protocol standards that can be used to calculate greenhouse gas inventories for use in emissions calculations.
https://ghgprotocol.org/calculation-tools

GRI G4 Sustainability Reporting Guidelines: The GRI G4 Sustainability Reporting Guidelines provide a standard set of metrics for companies to report on material environmental, social, and economic impacts, actions, and outcomes.
https://www.globalreporting.org/standards/

THESIS Help Center Video: Greenhouse Gas Emissions Intensity – Processing KPI: Short video tutorial on the Greenhouse Gas Emissions Intensity – Processing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/536525506

Background Information	**Greenhouse Gas (GHG) Protocol Corporate Standard:** The Greenhouse Gas (GHG) Protocol provides guidance and is a useful resource published by the World Resources Institute with the World Business Council for Sustainable Development as a guide for monitoring and accounting for greenhouse gas emissions. https://ghgprotocol.org/corporate-standard
Definitions	**CO2e:** Carbon dioxide equivalent; a metric that expresses the impact of a greenhouse gas in terms of the amount of carbon dioxide (CO2) that has the same global warming potential. **Greenhouse gas:** Gases that contribute to the greenhouse effect by absorbing infrared radiation in the atmosphere, e.g., carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.
Hotspots Addressed	***11.*** *Energy consumption – Processing*

13. WATER USE INTENSITY – PROCESSING

Question

What was the water use intensity in the company-owned or contract manufacturing facilities that manufactured your final product?

Response Options

- **A.** We are unable to determine at this time.
- **B.** Our water use intensity was:
  - **B1.**_____ liters per metric tonne of product.
  - **B2.**_____% of our product, by mass, is represented by the number reported above.

Guidance

Calculation & Scope

You may calculate B1 using product-specific data or estimate intensity via facility data that is not product specific. If using product-specific data, calculate B1 as the average of each product's water use intensity, weighted by the total mass produced of each product.

If using facility data, calculate B1 as the average of each final processing facility's water use intensity, weighted by the total mass of final product produced. If the processing facilities produce more than one category of product, only weight using the total mass of production specific to the product category in question.

Calculate B2 as the mass of final products for which you are able to obtain data, divided by total mass of final products produced, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Water use is defined as total withdrawals from municipal and private water providers, surface water, groundwater, or wells.

The data required for the CDP Water Security 2020 Questionnaire can be used to calculate your response (refer to W1.2b, W1.2h, and W5.1a). The data required for "Disclosure 303-3 Water withdrawal" in GRI 303: Water and Effluents 2018 can also be used to calculate your response.

Certifications, Standards & Tools

CDP Water Information Request: The CDP Water Information Request provides questions that assess a company's water use, goals, and management. The report provided by CDP provides the overview of the results from companies responding to the request. CDP can be contacted to respond to the Water Information Request.
https://www.cdp.net/en/guidance/guidance-for-companies

GRI G4 Sustainability Reporting Guidelines: The GRI G4 Sustainability Reporting Guidelines provide a standard set of metrics for companies to report on material environmental, social, and economic impacts, actions, and outcomes.
https://www.globalreporting.org/standards/

THESIS Help Center Video: Water Use Intensity – Processing KPI: Short video tutorial on the Water Use Intensity – Processing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/531017209

Definitions

Water use: Water use is defined as total withdrawals from municipal and private water providers, surface water, groundwater, or wells.

Hotspots Addressed

***12.** Water use – Processing*

14. PACKAGING RAW MATERIAL SOURCING

Question

What percentage of the sales packaging used for your final products, by mass, was post-consumer recycled material and sustainably-sourced renewable virgin material?

Response Options

- **A.** Not applicable. We do not use sales packaging for our product.
- **B.** We are unable to determine at this time.
- **C.** The sales packaging used for our final products was:
  - **C1.**_____% post-consumer recycled material.
  - **C2.**_____% sustainably-sourced renewable virgin material.

Guidance

Calculation & Scope

The scope of this question is the product category's sales packaging, which is defined as packaging that leaves a store with the consumer. Include the transportation-related packaging for product that is shipped directly to an end consumer.

Calculate C1 as the mass of post-consumer recycled material in the sales packaging of your final products, divided by the total mass of sales packaging used for your final products, then multiply by 100. This excludes pre-consumer recycled materials.

Calculate C2 as the mass of sustainably-sourced renewable virgin material in the sales packaging of your final products, divided by the total mass of sales packaging used for your final products, then multiply by 100. To be included in C2, the material must be third-party verified (e.g. for paper-based packaging FSC, SFI, PEFC would be examples of certifications for verification).

If data on packaging materials specific to these final products is not available, you may use more aggregated internal data to calculate C1 and C2 (e.g., company-level data for sales packaging of similar products).

The sum of C1 and C2 cannot be greater than 100%.

Please refer to THESIS KPI set for Packaging for more detailed packaging indicators.

Certifications, Standards & Tools

Global Protocol on Packaging Sustainability: The Global Protocol on Packaging Sustainability provides metrics and a framework for businesses on the relative sustainability of packaging.
https://www.theconsumergoodsforum.com/wp-content/uploads/2017/11/CGF-Global-Protocol-on-Packaging.pdf

ISO 18604:2013: ISO 18604:2013 (Packaging and the environment – Material recycling) provides measurement standards for determining how recyclable a particular product is.
https://www.iso.org/standard/55872.html

THESIS Help Center Video: Packaging Raw Material Sourcing KPI: Short video tutorial on the Packaging Raw Material Sourcing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/531017161

Background Information

Circulytics – Measuring circularity: The Ellen Macarthur Foundation's Circulytics assesses a company's overall circularity. The tool is designed to support a company's evolution to a circular economy by informing strategy development and decision making, and identifying opportunities to align with circular economy principles including: designing out waste, keeping materials and products in use, and generating environmental benefits.
https://www.ellenmacarthurfoundation.org/resources/apply/circulytics-measuring-circularity

FTC Green Guide's Recyclability Definition: In the United States, the Federal Trade Commission defines when a product or packaging can be claimed recyclable. Please refer these guidelines when determining recyclability.
https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguides.pdf

Global Protocol on Packaging Sustainability 2.0: The Global Protocol for Packaging Sustainability (GPPS 2.0) is a common set of indicators and metrics for business regarding sustainable packaging. The Consumer Goods Forum condensed the "Sustainable Packaging Indicators and Metrics Framework", developed by GreenBlue's Sustainable Packaging Coalition, into GPPS 2.0.
https://www.theconsumergoodsforum.com/wp-content/uploads/2017/11/CGF-Global-Protocol-on-Packaging.pdf

How2Recycle Certification: The How2Recycle Label provides guidance to consumers on how to recycle packaging for consumable goods. The label is intended to be used on all types of packaging and to provide instruction regarding how and where various raw materials can be recycled.
http://www.how2recycle.info/

Definitions

Post-consumer recycled material: "Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain." (ISO 14021:2016 - Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling))

Pre-consumer recycled material: "Material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it." (ISO 14021:2016 - Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling))

Renewable material: "Material that is composed of biomass from a living source and that can be continually replenished. To be defined as renewable, virgin materials shall come from sources which are replenished at a rate equal to or greater than the rate of depletion." (FTC Green Guides:2012)

Sales packaging: "Packaging that leaves a store with the consumer". (Global Protocol on Packaging Sustainability 2.0:2011)

Sustainably-sourced material: Material for which it can be demonstrated through second- or third-party verification that the virgin raw material has been harvested or produced legally and in a way that minimizes damage to the environment, workers, and communities. Materials such as paper can be included in this definition if the source of the packaging content comes from sustainably-managed forests with no deforestation.

Hotspots Addressed

***13.** Packaging disposal - Resource impacts*

15. SUSTAINABLE PACKAGING DESIGN AND PRODUCTION

Question

What percentage of the sales packaging for your final product was recyclable, was formally assessed for material and process efficiency and weight or volume optimization, had demonstrated quantified environmental impact reduction, and was labelled for recycling according to an established standard?

Response Options

- **A.** Not applicable. We do not use sales packaging for our product.
- **B.** We are unable to determine at this time.
- **C.** We are able to report the following for the sales packaging used for our final products:
  - **C1.**_____% of our packaging, by mass, was recyclable.
  - **C2.**_____ % of our packaging, by mass, has demonstrated progress on goals for material and process efficiency during packaging manufacturing.
  - **C3.**_____ % of our packaging, by mass, has demonstrated progress on goals for weight or volume optimization during packaging design.
  - **C4.**_____ % of our packaging, by mass, has a demonstrated quantified environmental impact reduction.
  - **C5.**_____ % of our packaging, by units sold in the US and Canada, was labeled with How2Recycle.
  - **C6.**_____ % of our packaging, by units sold in regions outside the US and Canada, was labeled with an established third-party recycling label.

Guidance

Calculation & Scope

Calculate C1 as the mass of sales packaging used for your final product that was recyclable, divided by the total mass of sales packaging used for your final product, then multiply by 100.

Calculate C2 as the mass of sales packaging used for your final product that has demonstrated progress on goals for material and process efficiency during packaging manufacturing, divided by the total mass of sales packaging used for your final product, then multiply by 100.

Calculate C3 as the mass of sales packaging used for your final product that has demonstrated progress on goals for weight or volume optimization during packaging design, divided by the total mass of sales packaging used for your final product, then multiply by 100.

Goals must be quantitative and time-bound and progress must be reported publicly. Public reporting may include voluntary corporate reporting, sustainability reporting programs, or reporting as part of regulatory compliance.

Calculate C4 as the mass of sales packaging used for your final product that has demonstrated quantified environmental impact reductions, divided by the total mass sales packaging used for your final product, then multiply by 100. Include sales packaging with demonstrated impact reductions since the inception of the product or since purchase of the brand, if post-inception.

Methods for demonstrating quantified environmental impact reduction include, but are not limited to, life cycle impact assessment, or assessment against ISO Standard 18602:2013 (Packaging and the environment -- Optimization of the packaging system), or EN 13428:2004 (Packaging: Requirements specific to manufacturing and composition - Prevention by source reduction).

Calculate C5 as the number of units sold in the US and Canada that had sales packaging labeled with How2Recycle divided by the total number of units sold in the US and Canada that had sales packaging, then multiply by 100.

Calculate C6 as the number of units sold in regions outside the US and Canada that had sales packaging labeled according to an established third-party standard divided by the total number of units sold in regions outside the US and Canada that had sales packaging, then multiply by 100. Third party standards include those listed in the Certifications, Standards & Tools section of this KPI. Only include regions outside the US and Canada that are covered by the referenced third-party standards in your calculations.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

Australasian Recycling Label (ARL): Used in Australia and New Zealand, the ARL details how best to label packaging for recycling to assist consumers in recycling correctly.
https://recyclingnearyou.com.au/arl/

Ecoembes Recycling Symbols: Used in Spain, the Ecoembes recycling symbols provide information to consumers for the recycling of packaging up to six different colors: blue for paper and cardboard, yellow for plastics and cans, green for glass, orange for organic materials, red for hazardous waste, and grey for everything else.
https://www.ecoembes.com/en/home

EN 13428: Prevention by packaging source reduction: European standard 13428:2004 outlines a method for evaluating if packaging material weight and/or volume have been sufficiently minimized while also taking into consideration other packaging performance parameters. The standard also includes recommended methodology for identifying heavy metals and dangerous substances in packaging formats.
http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/packaging/index_en.htm

European Certification of Plastics Recycling (EUCertPlast): The EuCertPlast Certification is a European wide certification program for companies that recycle post-consumer plastic waste.
https://www.eucertplast.eu/

How2Recycle Certification: The How2Recycle Label provides guidance to consumers on how to recycle packaging for consumable goods. The label is intended to be used on all types of packaging and to provide instruction regarding how and where various raw materials can be recycled.
http://www.how2recycle.info/

ISO 18602:2013: ISO 18602 provides criteria for optimization of packaging systems. It outlines a procedure for reduction of packaging material weight or volume while taking into consideration packaging function. It also provides assessment methodology for substances hazardous to the environment and heavy metals.
https://www.iso.org/standard/55870.html

Japanese Recycling Symbols: Used in Japan, Japanese recycling symbols tell in a glance to consumers what is recyclable and what is not recyclable, and assist consumers in recycling correctly.
https://www.jcpra.or.jp/Portals/0/resource/eng/JCPRAdocuments202012.pdf

Le Guide du TRI (Citeo Sorting Guide): sed in France, the Citeo Sorting Guide provides information to companies about which product components should be recycled and which should be disposed.
https://bo.citeo.com/sites/default/files/2019-07/20190617_Guide_Info-tri_Citeo_EN.pdf

On-Pack Recycling Label: Used in the UK, the On-Pack Recycling Label details how best to label packaging for recycling to assist consumers in recycling correctly.
http://www.oprl.org.uk/

The Association of Postconsumer Plastic Recyclers (APR): The APR is an international national trade association representing the plastics recycling industry.
https://plasticsrecycling.org/about

The Triman: Used in France, the Triman is a recycling symbol in e-commerce that sells and ships to France.
https://www.msl.io/uploads/downloads/Triman-Users-handbook-english-V21.pdf

Woolworths Recycling Labels: Used in South Africa, the Woolworths Recycling Labels detail how best to label packaging for recycling to assist consumers in recycling correctly.
https://www.woolworths.co.za/content/howto/good-business-journey/how-to-read-our-recycling-labels/_/A-cmp201960

Background Information

Circulytics – Measuring circularity: The Ellen Macarthur Foundation's Circulytics assesses a company's overall circularity. The tool is designed to support a company's evolution to a circular economy by informing strategy development and decision making, and identifying opportunities to align with circular economy principles including: designing out waste, keeping materials and products in use, and generating environmental benefits.
https://www.ellenmacarthurfoundation.org/resources/apply/circulytics-measuring-circularity

FTC Green Guide's Recyclability Definition: In the United States, the Federal Trade Commission defines when a product or packaging can be claimed recyclable. Please refer these guidelines when determining recyclability.
https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguides.pdf

Recycle Now: Recycle Now is the national recycling effort in England. The website contains examples of recycling labels that may be used on packaging and how to interpret them.
http://www.recyclenow.com/recycle/packaging-symbols-explained

Walmart Sustainable Packaging Playbook: Walmart provides an overview of sustainable packaging best practices for suppliers interested in improving and innovating packaging.
https://www.walmartsustainabilityhub.com/climate/project-gigaton/packaging

Definitions

Goals: Goals should be specific, measurable, achievable, relevant, and time-bound.

Material and process efficiency: Material efficiency is the ratio between the material input and the benefits derived. Resource conservation (source reduction) of material inputs and/or improving the functionality of the packaging can positively impact material efficiency. Process efficiency is the ratio between the time spent on production steps to the output. Opportunities to improve material and process efficiency include process improvement, product redesign, and technology changes to packaging equipment. It should be noted that continual source reduction has benefits, but there are trade-offs that must be assessed.

Sales packaging: "Packaging that leaves a store with the consumer". (Global Protocol on Packaging Sustainability 2.0:2011)

Third-party audit: An audit conducted by external, independent auditing organizations, such as those providing certification of conformity to a standard.

Weight or volume optimization: "Process for the achievement of a minimum adequate weight or volume (source reduction) for meeting the necessary requirements of primary or secondary or transport packaging, when performance and user/consumer acceptability remain unchanged or adequate, thereby reducing the impact on the environment." (ISO 18601:2013 - Packaging and the environment--General requirements for the use of ISO standards in the field of packaging and the environment)

Hotspots Addressed

***13.** Packaging disposal - Resource impacts*

Category Sustainability Profile

Hotspots

Hotspots are activities in a product's life cycle that have a documented environmental or social impact. TSC evaluates the quality and quantity of the scientific sources of evidence for each hotspot according to a defined decision tree before they are included in the CSP. Items marked with an asterisk (*) are *additional issues* that have not achieved the same level of evidence as a hotspot. For more information on the methodology TSC uses to identify hotspots visit: http://www.sustainabilityconsortium.org/toolkit-methodology

AGRICULTURE AND LIVESTOCK

1. Supply chain traceability Due to the complexity of supply chains, information about where the supply chain originates is limited. This makes it more difficult for companies to manage environmental and social impacts. **Related Improvement Opportunities** ***9.*** *Map the geographic origins of agricultural supply chains* **KPIs** ***1.*** *Crop Supply Mapping*	**References** ▪ Maloni & Brown, 2006 ▪ Roth, Tsay, Pullman, & Gray, 2008 ▪ Wagner & Bode, 2008
2. Access to opportunities for smallholder farmers - On-farm Smallholder farmers face a number of challenges that impact their ability to maintain farming operations. These challenges include access to agricultural inputs, banking services, farming information, and markets. Female smallholders are at an increased risk of facing these challenges. **Related Improvement Opportunities** ***2.*** *Encourage the use of mobile phones to provide information and services to smallholder farmers* ***10.*** *Partner with civil society organizations to link smallholder farmers to suppliers and buyers* ***13.*** *Support producer cooperative groups* **KPIs** ***2.*** *Access to Opportunities for Smallholder Farmers*	**References** ▪ Denning et al., 2009 ▪ Ezumah & Di Domenico, 1995 ▪ Foltz, 2004 ▪ International Fund for Agricultural Development, 2013 ▪ Kelly, Adesina, & Gordon, 2003 ▪ Markelova & Mwangi, 2010 ▪ Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009 ▪ Mukhebi et al., 2007 ▪ Ogunlela & Mukhtar, 2009 ▪ Ozkan, Ediz, Ceyhan, & Goldey, 2000 ▪ Shiferaw, Hellin & Muricho, 2011 ▪ Thapa, 2013 ▪ Ton, 2008
3. Energy consumption - On-farm Using energy on-farm depletes fossil fuel resources, releases greenhouse gas and ozone depleting emissions, and contributes to tropospheric ozone formation. These effects cause climate change and adverse effects to human health. **Related Improvement Opportunities** ***3.*** *Implement conservation tillage practices on-farm* ***4.*** *Implement energy conservation practices for farm vehicle operation* ***11.*** *Perform preventative maintenance on farm vehicles* **KPIs** ***5.*** *Greenhouse Gas Emissions Intensity - On-farm* ***11.*** *Yield - On-farm*	**References** ▪ Grant & Beer, 2008 ▪ Nemecek, Frick, Dubois, & Gaillard, 2001 ▪ Pelletier, Arsenault, & Tyedmers, 2008

4. Fertilizer application - On-farm

Applied fertilizers, both synthetic and organic, release greenhouse gas, smog-forming, and acidifying emissions and contribute to water quality impacts. Eutrophication is caused by nutrients in surface water runoff, and groundwater contamination occurs due to leaching of nitrate. Also, heavy metals in fertilizers contribute to soil, water, and human toxicity.

Related Improvement Opportunities

3. *Implement conservation tillage practices on-farm*
6. *Implement intercropping*
7. *Implement soil monitoring*

KPIs

4. *Fertilizer Application - On-farm*
5. *Greenhouse Gas Emissions Intensity - On-farm*

References

- Grant & Beer, 2008
- Mossbarger & Yost, 1989
- Nemecek, Frick, Dubois, & Gaillard, 2001
- Ongley, 1996
- Pelletier, Arsenault, & Tyedmers, 2008
- Tan, Quigley, Brock, & Hulugalle, 2013

5. Labor rights - On-farm*

Workers are at risk of several labor rights challenges. These challenges include unfair pay, discrimination, challenges to join unions and collectively bargain, long working hours, sexual harassment and assault, and dangerous working conditions. Women and migrants are at an increased risk of facing these challenges.

Related Improvement Opportunities

1. *Develop compensation policies and supplier guidance that consider the cost of living in the area of employment for farm laborers*
22. *Allow workers to join unions or non-union employee representation (NER) programs*
24. *Implement labor management and equality monitoring programs*

KPIs

7. *Labor Rights - On-farm*

References

- Dominguez, 1997
- McCann, 2005
- National Center for Farmworker Health, 2012
- Saget, 2006
- Waugh, 2010

6. Land transformation - On-farm*

Land transformation for agricultural expansion can involve deforestation, clearing of savannahs, burning, and draining of wetlands, which impacts climate change, water quality, wildlife, and biodiversity. Climate change impacts occur through release of greenhouse gases from exposed soil, land clearing burns, and reduction of carbon sequestration potential. Burning and land transformation contribute to habitat destruction and fragmentation, which endangers wildlife and biodiversity. Additionally, water quality can be impacted when vegetated buffers near water bodies are cleared.

Related Improvement Opportunities

12. *Restore and reuse previously cleared land for agriculture*
15. *Use biostimulants*

KPIs

3. *Deforestation and Land Conversion - On-farm*
11. *Yield - On-farm*

References

- Klink & Moreira, 2002
- Wright & Wimberly, 2013

7. Pesticide application - On-farm

Crop protection chemical application can lead to biodiversity loss, soil toxicity from persistence in the soil, aquatic toxicity from run-off, groundwater contamination from leaching, and human health effects from aerial drift and exposure during application.

Related Improvement Opportunities

5. *Implement integrated pest management*
6. *Implement intercropping*
8. *Implement worker health and safety programs on-farm*

KPIs

8. *Pesticide Application - On-farm*

References

- Lee et al., 2004b
- Mossbarger & Yost, 1989
- Ongley, 1996

8. Soil management - On-farm

Agricultural tillage can deplete soil nutrients and soil microbial diversity and results in the release of greenhouse gases and reduced carbon sequestration potential. Tillage can also make soil more vulnerable to erosion, which can lead to eutrophication and aquatic toxicity when transported via runoff to water bodies.

Related Improvement Opportunities

3. *Implement conservation tillage practices on-farm*
6. *Implement intercropping*
7. *Implement soil monitoring*

KPIs

5. *Greenhouse Gas Emissions Intensity - On-farm*
9. *Soil Erosion - On-farm*

References

- Huggins & Reganold, 2008
- Klink & Moreira, 2002
- Ongley, 1996
- West & Post, 2002

9. Water use - On-farm

Irrigation water usage leads to freshwater depletion as well as to biodiversity and ecosystem losses from altered aquatic habitats and soil conditions.

Related Improvement Opportunities

14. *Use reclaimed wastewater for agriculture*
23. *Evaluate the sustainability of water use in the context of local community and environmental water requirements*

KPIs

6. *Irrigation Water Use Intensity - On-farm*

References

- Barber, Hutson, Linsey, Lovelace, & Maupin 2009
- Mossbarger & Yost, 1989
- U.S. EPA, 2012g

10. Worker health and safety - On-farm

Workers are at risk of several health and safety challenges associated with farm work. These challenges include injuries associated with tools and machinery, repetitive motions, as well as exposure to chemicals and dusts that may have adverse effects on their health.

Related Improvement Opportunities

8. *Implement worker health and safety programs on-farm*

KPIs

10. *Worker Health and Safety - On-farm*

References

- Doss & McLeod, 2002
- Fathallah & Meyers, 2004
- Kirkhorn & Schenker, 2002
- Kogevinas et al., 1999
- McCurdy & Carroll, 2000
- Mobed, Gold, & Schenker, 1992
- Molocznik, 2002

MANUFACTURING AND ASSEMBLY

11. Energy consumption - Processing*
Energy consumption for corn wet milling leads to fossil-fuel resource depletion.

Related Improvement Opportunities

18. *Source mercury-free caustic soda*

KPIs

12. *Greenhouse Gas Emissions Intensity - Processing*

References

- Cicuttini, Kollacks, & Rekers, 1983
- Galitsky, Worrell, & Ruth, 2003

12. Water use - Processing*
Water withdrawals for corn wet milling contribute to freshwater depletion.

Related Improvement Opportunities

16. *Implement industrial water reuse and recycling*
17. *Implement water metering and monitoring at industrial facilities*
23. *Evaluate the sustainability of water use in the context of local community and environmental water requirements*

KPIs

13. *Water Use Intensity - Processing*

References

- Cicuttini, Kollacks, & Rekers, 1983
- Kollacks & Rekers, 1988

PACKAGING

13. Packaging disposal - Resource impacts
Low recovery of packaging material results in resource related impacts from creation of packaging from virgin materials, including depletion of non-renewable resources and environmental and social impacts in raw material extraction.

Related Improvement Opportunities

19. *Optimized packaging-product systems*
20. *Utilize recycled content*
21. *Utilize renewable content*

KPIs

14. *Packaging Raw Material Sourcing*
15. *Sustainable Packaging Design and Production*

References

- European Commission, 2014
- Randell, Picken, & Grant, 2014
- US EPA, 2014b

Improvement Opportunities

Improvement opportunities are practices that address one or more environmental or social hotspots and are actionable by brand manufacturers or their suppliers. TSC evaluates the quality of the evidence supporting each improvement opportunity according to a defined decision tree before including it in the CSP. For more information on the methodology TSC uses to identify hotspots visit: http://www.sustainabilityconsortium.org/toolkit-methodology

AGRICULTURE AND LIVESTOCK

1. Develop compensation policies and supplier guidance that consider the cost of living in the area of employment for farm laborers Compensation policies may consider the expenses needed to provide for the basic level of consumption, as well as other costs of living. There are many models for determining a fair compensation for workers. Prominent models include living wage and family wage, which take into account many variables for the cost of living. Monitor actual wages against the chosen model. **Related Hotspots** ***5.*** *Labor rights - On-farm*	**References** ▪ Ethical Trading Initiative, 2008 ▪ International Labour Organization, 2011
2. Encourage the use of mobile phones to provide information and services to smallholder farmers Mobile phones are widely used throughout the developing world and have the capability of providing banking services as well as important information for farming including input costs, commodity prices, weather patterns, and best management practices. **Related Hotspots** ***2.*** *Access to opportunities for smallholder farmers - On-farm*	**References** ▪ Agri-fin Mobile, 2013 ▪ Torero, 2013
3. Implement conservation tillage practices on-farm Reduced tillage and no-till practices can reduce on-farm energy consumption by reducing equipment use associated with tilling. Tilling also makes the soil more vulnerable to erosion, so conservation tillage practices can reduce soil, manure, and fertilizer and run-off to waterways. Additionally, conservation tillage practices can maintain soil carbon sequestration potential and decrease soil carbon emissions that are released during and shortly after tilling. **Related Hotspots** ***3.*** *Energy consumption - On-farm* ***4.*** *Fertilizer application - On-farm* ***8.*** *Soil management - On-farm*	**References** ▪ Derpsch, Friedrich, Kassam, & Li, 2010 ▪ Gan, Liang, Hamel, Cutforth, & Wang, 2011 ▪ Innovation Center for U.S. Dairy, 2012 ▪ Michel et al., 1985 ▪ Rochette & Janzen, 2005 ▪ Snyder et al., 2009 ▪ USDA NRCS, 2009
4. Implement energy conservation practices for farm vehicle operation There are many practices that can help to conserve energy used by farm vehicles. Some practices include minimizing field passes by performing multiple operations at a time, maintaining proper ballast, using a tractor size that is suitable for each operation, shifting tractors to a higher gear and throttling down during field operations, minimizing driving tractors on the road, upgrading to more efficient models, minimizing idling, reducing excess weight on vehicles, and refraining from using quick start engines. **Related Hotspots** ***3.*** *Energy consumption - On-farm*	**References** ▪ California Farm Bureau Federation, 2014 ▪ NCAT, 2007

5. Implement integrated pest management Integrated pest management (IPM) is a set of strategies taken to prevent crop damage by pests through practices such as biological control, biopesticides, habitat manipulation, and using resistant crop varieties. Crop protection chemical application is only resorted to after monitoring and guidelines indicate that it is necessary. Additionally, if crop protection chemicals are used, they only target the pest of concern and the selection and application process minimizes the risk of environmental and human health impacts. **Related Hotspots** ***7.*** *Pesticide application - On-farm*	**References** ▪ du Jardin, 2015 ▪ Fry and Thurston, 1980 ▪ Horrigan, Lawrence, & Walker, 2002 ▪ Le Mire et al., 2016 ▪ Leske & Hogmire, 2005 ▪ Thomas, M.B., 1999 ▪ Tsakiris, Danis, Stratis, Nikitovic, Dialyna et al, 2003 ▪ University of California Agriculture & Natural Resources, 2011
6. Implement intercropping Intercropping is the practice of planting two or more crops together. Crops may be alternated in rows or interspersed. Intercropping can reduce crop protection chemical and nutrient requirements because it improves biodiversity and soil fertility. It has also been shown to reduce soil erosion due to improved water infiltration and retention. **Related Hotspots** ***4.*** *Fertilizer application - On-farm* ***7.*** *Pesticide application - On-farm* ***8.*** *Soil management - On-farm*	**References** ▪ Iowa State University Extension, 1999 ▪ Machado, 2009 ▪ USDA NRCS, 2011
7. Implement soil monitoring Monitoring soil nutrients, structure, and overall fertility can help inform decisions about nutrient requirements and erosion control. **Related Hotspots** ***4.*** *Fertilizer application - On-farm* ***8.*** *Soil management - On-farm*	**References** ▪ Brady & Weil, 2008
8. Implement worker health and safety programs on-farm Worker health and safety programs should address the appropriate ways to handle, use, and store pesticides and pesticide application equipment as well as educate workers about the risks associated with farm work and the practices that mitigate those risks. Practices should be specific to ergonomics, repetitive motions, chemical and particulate exposure, appropriate use of personal protective equipment (PPE), and proper use of tools and machinery. **Related Hotspots** ***7.*** *Pesticide application - On-farm* ***10.*** *Worker health and safety - On-farm*	**References** ▪ International Finance Corporation, 2012a ▪ Meyer & Radwin, 2007
9. Map the geographic origins of agricultural supply chains Knowing the geographic origins of agricultural supply chains can inform planning and policy for the sustainable management of social and environmental farm practices. **Related Hotspots** ***1.*** *Supply chain traceability*	**References** ▪ Bryan, Barry & Marvanek, 2009 ▪ Maloni & Brown, 2006 ▪ Roth, Tsay, Pullman, & Gray, 2008 ▪ Scholten, Verdouw, Beulens, van der Vorst, & Santaclara, 2016 ▪ Wagner & Bode, 2008

10. Partner with civil society organizations to link smallholder farmers to suppliers and buyers Participate in or lead partnerships with civil society organizations that engage smallholder farmers. Doing so may enhance smallholder farmers' expertise, capacity, and production techniques, as well as increase their access to markets, which can increase supply chain security. **Related Hotspots** ***2.*** *Access to opportunities for smallholder farmers - On-farm*	**References** ▪ Markelova & Mwangi, 2010 ▪ Njuki, Kruger, & Starr, 2013
11. Perform preventative maintenance on farm vehicles Preventative maintenance can improve fuel efficiency and performance of farm vehicles. Maintenance checks can include tire pressure, fuel filters, wheel balance and alignment, engine thermostats, gas caps, spark plugs, diesel injectors and fuel pumps, and many other things that need to function properly to preserve fuel efficiency. **Related Hotspots** ***3.*** *Energy consumption - On-farm*	**References** ▪ California Farm Bureau Federation, 2014 ▪ NCAT, 2007
12. Restore and reuse previously cleared land for agriculture Restore degraded agricultural land to agriculture, which avoids clearing new land for farming and preserves habitat. **Related Hotspots** ***6.*** *Land transformation - On-farm*	**References** ▪ Tilman et al., 2001
13. Support producer cooperative groups Support producer cooperative groups, which can provide the collective ability to acquire micro-financing services, obtain agricultural inputs, and access market channels and market information. This provides the members of the cooperative with the tools and network needed to increase productivity and income. **Related Hotspots** ***2.*** *Access to opportunities for smallholder farmers - On-farm*	**References** ▪ Markelova & Mwangi, 2010 ▪ Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009 ▪ Sjauw-Koen-Fa, 2012 ▪ Ton, 2008
14. Use reclaimed wastewater for agriculture Reclaimed wastewater from municipal or industrial treatment can be used as a supplemental irrigation and fertilizer source if it is treated to appropriate water quality parameters. **Related Hotspots** ***9.*** *Water use - On-farm*	**References** ▪ Alcon et al., 2012 ▪ Mateo-Sagasta et al., 2013 ▪ US EPA, 2012
15. Use biostimulants Plant biostimulants enhance nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and plant health, which can result in crop yield increases that help to reduce land transformation for agriculture. Examples of biostimulants include: plant growth-promoting rhizobacteria, humic substances, protein hydrolysates, seaweed extracts, botanicals, biopolymers, beneficial fungi, and beneficial bacteria. **Related Hotspots** ***6.*** *Land transformation - On-farm*	**References** ▪ du Jardin, 2015 ▪ Le Mire et al., 2016

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16.	**Implement industrial water reuse and recycling** Industrial facilities may be able to use reclaimed water for process water, boiler feed water, cooling towers, flushing toilets, and site irrigation. Industrial water reuse can help facilities reduce water use and the demand for potable water. **Related Hotspots** ***12.*** *Water use - Processing*	**References** ▪ US EPA, 2012
17.	**Implement water metering and monitoring at industrial facilities** Water metering and monitoring can be used to set goals, develop water conservation and efficiency plans, estimate water-use for reporting purposes, raise employee awareness of water use, detect leaks, and measure effectiveness of conservation efforts. Installing water meters on individual pieces of equipment can provide a more detailed assessment of equipment water use efficiency. **Related Hotspots** ***12.*** *Water use - Processing*	**References** ▪ US EPA, 2012k
18.	**Source mercury-free caustic soda** Produce caustic soda through newer technology, such as membrane cell or diaphragm cell technologies, instead of conventional processes because they do not use mercury and are more energy efficient. **Related Hotspots** ***11.*** *Energy consumption - Processing*	**References** ▪ European Commission, 2001 ▪ Wallinga, et al., 2009

PACKAGING

19.	**Optimized packaging-product systems** Optimized packaging systems reduce environmental and social impacts associated with packaging production while appropriately protecting products. **Related Hotspots** ***13.*** *Packaging disposal - Resource impacts*	**References** ▪ Sustainable Packaging Coalition, 2009 ▪ The Consumer Goods Forum, 2011
20.	**Utilize recycled content** Utilizing recycled content, measured as percentage pre-consumer and post-consumer recycled content per packaging unit, can reduce impacts associated with virgin material sourcing, lower overall packaging costs, and improve an organization's environmental and social impact. **Related Hotspots** ***13.*** *Packaging disposal - Resource impacts*	**References** ▪ European Commission, 2001b ▪ IFC, 2007c ▪ Miller, Justiniano, & McQueen, 2005 ▪ Paper Task Force, 1995 ▪ Pulselli et al., 2009 ▪ Sustainable Packaging Coalition, 2009 ▪ The Consumer Goods Forum, 2011 ▪ US EPA, 2012b ▪ U.S. General Services Administration, 2013 ▪ US EPA, 2008c
21.	**Utilize renewable content** Renewable content, defined as material derived from living sources that are replenished at a rate equal to or greater than depletion rate, can be used to reduce impacts from virgin material sourcing, lower overall packaging costs, and improve an organization's environmental and social impact. **Related Hotspots** ***13.*** *Packaging disposal - Resource impacts*	**References** ▪ Sustainable Packaging Coalition, 2009 ▪ The Consumer Goods Forum, 2011

IMPROVEMENT OPPORTUNITIES FOR MULTIPLE LIFE CYCLE STAGES

22. Allow workers to join unions or non-union employee representation (NER) programs Non-union employee representation (NER) programs are methods for providing aspects of freedom of association and collective bargaining to workers that may not have access to unions. NERs are alternative approaches to union certifications for employee/employer relations. They involve the implementation of non-adversarial and democratic representation of supply chain actors. Examples of NERs include compulsory proportional representation (CPR) and statutory works councils. **Related Hotspots** ***5.*** *Labor rights - On-farm*	**References** ▪ Harcourt & Lam, 2007
23. Evaluate the sustainability of water use in the context of local community and environmental water requirements When planning developments, water availability and appropriation must be evaluated in the context of the water resources used by the surrounding community and in the context of the capacity of the surrounding ecosystems. **Related Hotspots** ***9.*** *Water use - On-farm* ***12.*** *Water use - Processing*	**References** ▪ Aldaya et al., 2012 ▪ Minnesota Environmental Quality Board, 2008
24. Implement labor management and equality monitoring programs Employers should implement labor management and equality monitoring to prevent discrimination in their labor and hiring policies and procedures along the lines of race, color, gender, age, religion, social class, political tendencies, nationality, sexual orientation, or civil status. **Related Hotspots** ***5.*** *Labor rights - On-farm*	**References** ▪ Kearney and Hays, 2007 ▪ Locke et al., 2007

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Release Notes

*** 02.06.10, May 2021 ***
- In-text references and broken resource links (URLs) included in the KPI guidance were updated to the most recent available versions. Where no alternative resource was available, the item was substituted with a comparable resource or was removed.
Deforestation and Land Conversion – Feed Sourcing
- Calculation & Scope: Text added to include several certifications that may inform the response options.
Sustainable Packaging Design and Production KPI:
- Question: The question text was updated to reflect the changes below.
- Response Options: A response option for the percentage sales packaging labeled with How2Recycle in the US and Canada has been added.
- Response Options: A response option for the percentage of the sales packaging that was labeled for recycling according to an established standard outside the US and Canada has been added.
- Response Options: The existing response options for recyclability, demonstrated progress on goals for material and process efficiency and weight or volume optimization, and impact reduction were retained.
- Calculation & Scope: Text added to support the added response options above.
- Certifications, Standards & Tools: References to support the new response options above have been added.
- Definitions: “Third-party audit” was added.
Pesticide Application - On-farm KPI:
- Calculation & Scope: Added language to the guidance to align with other sustainable agriculture standards that include IPM sections.
02.05.10 May 2020

- In-text references and broken resource links (URLs) included in the KPI guidance were updated to the most recent available versions
- Ensured that all relevant of deforestation-related terms were linked to the deforestation KPI

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02.04.10 June 2019

- Broken links referenced in the KPI guidance were corrected
- Access to Opportunities for Smallholder Farmers KPI: Modified the question, response options, and guidance to 1) broaden the scope of topics that are important to the development of smallholder farmers, 2) make a distinction between the various services that are important for smallholder livelihoods and development, and 3) expand the scope of actors that can assist in ensuring smallholders have access to services and trainings.
- Crop Supply Mapping KPI: Added clarifying guidance and an example scenario to help ensure that the percentages reported in B1-B4 are mutually exclusive and the sums do not exceed 100%.
- Deforestation and Land Conversion KPI: Added language to the guidance clarifying that conversion of HCV and HCS non-forest lands includes HCV and HCS non-forest native ecosystems. Modified definition of "land conversion" to include native ecosystems.
- Fertilizer Application KPI: Added the Cool Farm Tool to Standards, Certifications, and Tools. Revised guidance to provide clarity on how to use results from the Cool Farm Tool to respond to the KPI and included a reference to TSC's Fertilizer Application KPI Calculation Tool.
- Greenhouse Gas Emissions Intensity – On-farm KPI: Added COMET-Farm to Standards, Certifications, and Tools.
- Irrigation Water Use Intensity KPI: Provided instructions in the guidance for how to respond to B1 in situations where no irrigation water is used. Also added the Cool Farm Tool to Standards, Certifications, and Tools, along with guidance for how to use the tool to respond to B1.
- Labor Rights – On-farm KPI: Revised guidance and response options to address policies, risk assessment, training, evaluation, and audits for labor rights issues. KPI question; Certifications, Standards, and Tools; and Background Information were also revised.
- Worker Health and Safety – On-farm KPI: Revised guidance and response options to address a series of practices companies may enact to manage worker health and safety risks including risk assessment, training, and audits. KPI question; Certifications, Standards, and Tools; and Background Information were also revised.

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02.03.10, June 2018

- Broken links referenced in the KPI guidance were corrected.
- KPI guidance language referencing CDP’s Information Requests for Climate Change and Water were updated to reflect the 2018 versions.
- Crop Supply Mapping KPI: Response option language was changed for greater clarity. The meaning of the response options and the calculations required have not changed.

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02.02.10, June 2017

Language referring to the "last twelve months" was removed from the question and/or response options text to avoid any confusion with the related statement in the "Calculation and Scope" of the Guidance. The following KPIs were affected:
- Access to Opportunities for Smallholder Farmers
- Crop Supply Mapping
- Fertilizer Application - On-farm
- Greenhouse Gas Emissions Intensity - On-farm
- Greenhouse Gas Emissions Intensity - Processing
- Irrigation Water Use Intensity - On-farm
- Pesticide Application - On-farm
- Soil Erosion - On-farm
- Water Use Intensity - Processing
- Yield - On-farm

Pesticide Application
- Question: The question text was updated to reflect the addition of response option B2
- Response options: A new response option was added that asks for the percent of crop supply that came from farming or growing operations that shared their data on pesticide use.
- Calculation and Scope: The guidance for response option B1 was clarified to state: “Crop supply for which it can be verified that all pesticides applied were used in compliance with a national and/or local regulatory body (for supply produced in the U.S.) or with World Health Organization, United Nations, Food and Agriculture Organization, European, or U.S. standards (for supply produced outside of the U.S.) may be included in your response for B1.”
- Calculation and Scope: Guidance was added related to the new B2 response option.

Packaging Raw Material Sourcing KPI:
- Title: Changed from "Packaging Raw Material Sourcing and End-of-life"
- Response Options: A response option for recyclable content was moved to the Sustainable Packaging Design and Production KPI to improve the scorability and answerability of both KPIs. The remaining response options are defined to be mutually exclusive where the sum of the two percentages entered cannot be greater than 100%.
- Definitions: "Pre-consumer recycled content", "post-consumer recycled content", "sustainably sourced content", and "renewable content" were added or updated to improve interpretation.

Sustainable Packaging Design and Production:
- Question: The question text was updated to reflect the changes below.
- Response Options: A response option for the percentage of recyclable content was moved from the Packaging Raw Material Sourcing KPI to improve the scorability and answerability of both KPIs.
- Response Options: A qualitative response option was removed which stated: "We have established goals to address all of these factors and publicly report our progress towards those goals."
- Response Options: The above response option was replaced with two percentage response options for reporting "demonstrated progress on goals" for material and process efficiency as well as weight or volume optimization. The information required to respond to the KPI has not changed.
- Response Options: The existing response option for “quantifiable impact reduction” was retained.
- Definitions: "Material and process efficiency" and "weight or volume optimization" were updated.
- Definitions: "Resource conservation" was previously included as a separate factor and was included in the definition for material and process efficiency.

TSC's Multi-stakeholder Process

The Sustainability Consortium (TSC) is a multi-stakeholder organization comprised of leading companies, non-profit organizations, and other members that represent broad perspectives on sustainability. To build a KPI set that can be deployed widely, TSC acknowledges that members have diverse points of view. As such, the attributes, activities, KPIs, and scoring used in this KPI set represent a composite perspective of the current market and are not necessarily the views, policies, or program of any single member of TSC.

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