



An Overview: Sustainable Agriculture



As a leader in agriculture, Bayer has a heightened responsibility and the unique potential to advance farming for the benefit of society and the planet. With sustainability at the center of our strategy, our long-term success as a company lies in providing farmers with the best tools and solutions so they can achieve better harvests using less water, land and energy.

The Basics

- // **What:** Sustainable agriculture includes all the tools and practices farmers use to improve productivity and grow safe, healthy food, all while preserving natural resources.
- // **Why:** Today's food system is facing challenges. We have made great progress on areas like soil health, water use and greenhouse gas emissions, but production is still too resource-intensive – we can continue to make better use of our resources like water, land and labor.
- // **How:** As an agriculture leader, we at Bayer have the opportunity – and responsibility – to address the challenges of climate change, biodiversity loss and food security to create a better tomorrow for our planet. That's why, when it comes to managing our business, we've introduced three ambitious commitments to address these pressing challenges by 2030: 1) Reduce the environmental impact of crop protection by 30 percent, 2) Reduce field greenhouse gas emissions by 30 percent from the most emitting crop systems in the regions Bayer services and 3) Empower 100 million smallholder farmers to access sustainable agricultural solutions.

Biodiversity, climate change and food security are key challenges to humankind, and sustainable agriculture plays a key role to provide solutions.



The Background

According to the Food and Agricultural Organization (FAO) of the United Nations, the world's population is expected to reach nearly 10 billion by 2050, which will require farmers to produce 50 percent more food, feed and biofuels compared to 2013.¹ In addition, for half of a century, humanity has been consuming and emitting more than nature can recreate within a given year. We face limited farmland, a changing climate and evolving pest pressures that will require even more innovation to increase food productivity and ensure our natural resources are protected for future generations.

In line with the Sustainable Development Goals of the United Nations and the Paris Agreement, our sustainability commitments are designed to help more people thrive and make the most efficient use of natural resources. We believe every investment in innovation should also be an investment in sustainability. We are equally committed to helping reduce our environmental impact, as well as improving the lives of smallholder farmers

The Highlights

We must continue to grow enough food using fewer natural resources and less farmland.

- // Without innovative tools to protect crops, about half of our food would be lost to damaging pests.
- // Using these tools can also increase yields by up to 75 percent in some crops, ensuring enough food is available to us all.²
- // Agricultural innovations help farmers produce enough food on less land than ever before. While the world's population continues to soar, the amount of land devoted to farming began declining about 20 years ago.³

References

1. Food and Agriculture Organization of the United Nations. 2017. The future of food and agriculture: Trends and challenges. <http://www.fao.org/3/a-i6583e.pdf>
2. E. C. Oerke. 2006. Crop losses to pests Journal of Agriculture. 2006. <https://doi.org/10.1017/S0021859605005708>
3. Jon Fisher. The Nature Conservancy. 2014. <https://blog.nature.org/science/2014/06/18/global-agriculture-land-sustainability-deforestation-foodsecurity/>



An Overview: Sustainable Agriculture



The Highlights

Sustainable agriculture reduces our environmental impact and helps protect our crops.

- // Sustainable agriculture practices can help protect our food.⁴ This includes using chemical or biological crop protection products, as well as quality seeds that can better withstand pests, diseases and unfavorable weather conditions.
- // With our DripByDrip smart irrigation technology, automation allows water and crop protection products to be applied in the right quantities, in the right place and at the right time.
- // Our Intacta™ soybean seeds require fewer pesticides and have already allowed farmers in South America to keep 6.8 billion kilograms of carbon – the equivalent of 3.3 million cars – in the ground.

We're moving toward a carbon-zero future for agriculture.

- // Bayer encourages and promotes sustainable farming practices, such as reduced ploughing and crop rotation, that have been shown to increase soil nutrients and lower greenhouse gas emissions, especially in more arid growing regions.⁵
- // To avoid emissions, we're developing microbes that help crops extract nitrogen from the air and radically reduce the need for synthetic fertilizer – a major contributor to greenhouse gas emissions.
- // Rice is the main staple crop for half of the world's population and accounts for around 20 percent of global calorie consumption. We're developing hybrid rice, which in early field trials in India has improved rice production while reducing greenhouse gas emissions by as much as 40 percent.

These practices are also good for farmers and our economy.

- // Around 550 million smallholder farmers worldwide provide 80 percent of the food consumed in Asia and Sub-Saharan Africa and are an essential part of healthy and viable communities.⁶ But many still struggle to make a living as they are highly vulnerable to extreme weather conditions and crop losses.
- // We're focused on introducing digital tools that provide smallholder farmers real-time agronomic advice and build robust value-chain partnerships that help smallholder farmers both generate income and grow more safe food through sustainable farming practices.
- // We're also developing new climate- and pest-resilient maize and rice seed varieties to help farmers around the world adapt to extreme weather events and protect against local insects.

We have our own high standards, but we also look to other benchmarks.

- // We're committed to the [United Nation's Sustainable Development Goals](#): taking action on climate change, ending world hunger, and ensuring the health and well-being of people and our planet.
- // We established an independent Sustainability Council, formed by a range of external experts, to bring an outside perspective to our sustainability innovation, thinking and strategy.
- // We apply the same rigor to achieve our sustainability targets as we do to reach our financial targets. The goals will be core to our business operations and integrated into decision-making processes and management compensation and we will report out progress transparently.

Key Things to Remember

- // Bayer's work in sustainable agriculture is founded in a commitment to achieve a balance between production and protection – in short, how do we feed the world without starving the planet?
- // We must move forward with our eye on a more sustainable future. Every commitment to innovation should be a commitment to sustainability. We are committed to helping reduce the environmental impact of crop protection, reduce the carbon footprint of agriculture and empower smallholder farmers to access sustainable agricultural solutions.

References

4. CropLife International. <https://croplife.org/crop-protection/benefits/>
5. Ghimire et al. (2017) 107: 49. Nutrient Cycling in Agroecosystems. <https://doi.org/10.1007/s10705-016-9811-0>
6. Food and Agriculture Organization of the United Nations, The State of Food and Agriculture. 2017. <http://www.fao.org/3/a-i7658e.pdf>