

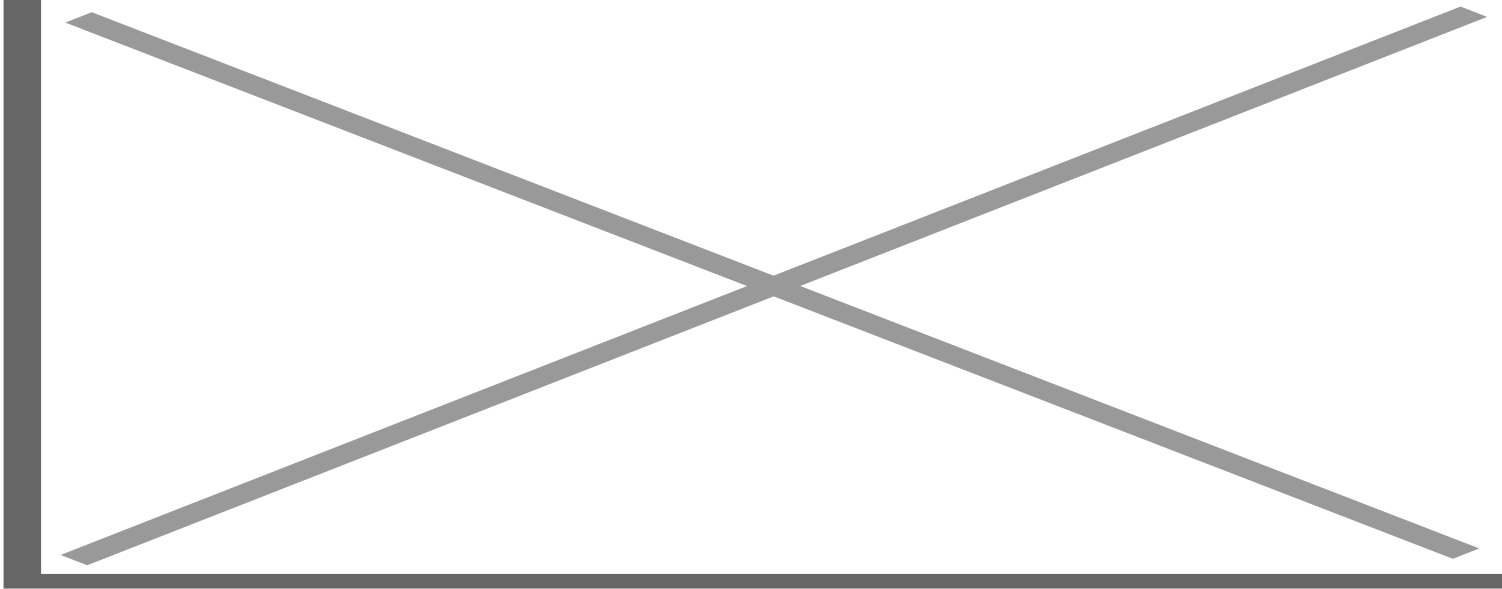
How are we feeding a global population that has tripled since 1940? Propelled by genetic tinkering, crop production takes up 8 to 11 times less land while maintaining yields

The impacts of climate change, particularly extreme weather events, will increase the likelihood of crop failure in the future. As such, the need for the development of climate-resilient crops that increase agricultural efficiency and sustain sustainable land use is critical to food security. Conservation agriculture, including practices such as reduced tillage, continuous cover, and crop rotation, provides a foundation for safeguarding agricultural systems. To support the widespread adoption of these practices, it will be necessary to make technological advancements through machinery breakthroughs, automation, advanced genetics, and biotechnology. Here we review approaches that integrate biotechnology and new breeding techniques to protect the yield into a conservation framework to accelerate sustainable intensification. By designing crops to function in the optimal planting configurations, improved crop rotational systems, and smart soil nutrient management, we can grow even more with less.

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