

Climate at a Glance: Crop Production



Key Takeaways:

- As our planet has slightly warmed, [global crop yields](#) and production set new records almost every year.
- [U.S. crop yields](#) continue to grow, setting new records nearly every year.
- Longer growing seasons, more atmospheric carbon dioxide, and better rainfall are creating ideal crop conditions.

Short Summary:

As global climate modestly warms, U.S. and global crop yields are setting new records almost every year. Thanks in large part to longer growing seasons, fewer frost events, more precipitation, and the fertilization effect of atmospheric carbon dioxide, farmers are producing more food on less land, allowing them to feed a growing global population.

The UN Food and Agriculture Organization (UNFAO) reports that the 2023 and 2024 global crop years – which were the two most recent years as this summary went to press in 2025 –

registered the two highest years ever in yields per acre.¹ See Figure 1. This continues short-term, medium-term, and long-term trends of increasing crop yields and new crop records being consistently set during Earth’s modest warming.^{2,3,4}

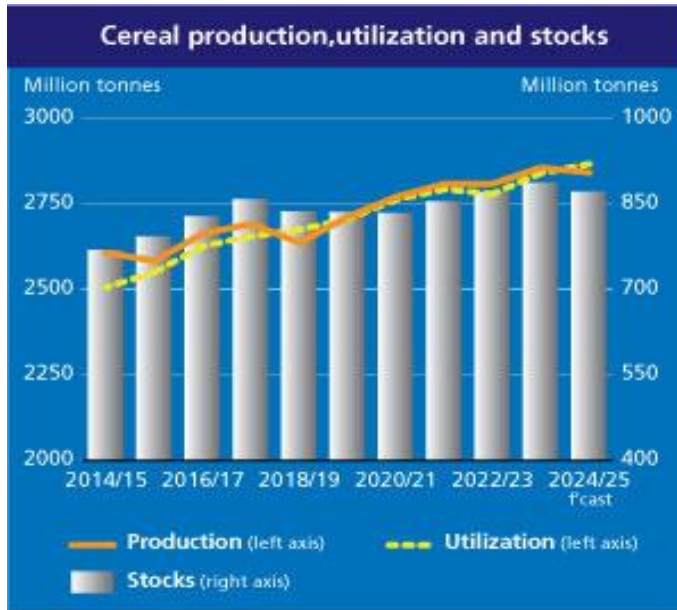


Figure 1: Global cereal grain production. Source: UNFAO

U.S. corn [set a new record in yield per acre in 2024](#), beating out the previous record that was set in 2023. Global [rice production is projected to set records](#), again, in 2025. Global [wheat production in the 2024/2025 wheat season set a new record](#), marking the fifth straight year that global wheat production set a new record.^{2,3,4} Breakdown by crop is shown in Figures 2a, 2b, and 2c.⁵

Global warming lengthens growing seasons, reduces frost events, and makes more land conducive to crop production. Global soil moisture has [maintained pace or modestly improved](#) as global temperatures have risen modestly, with greater oceanic evaporation leading to more global precipitation, especially during summer and fall crop seasons.^{6,7}

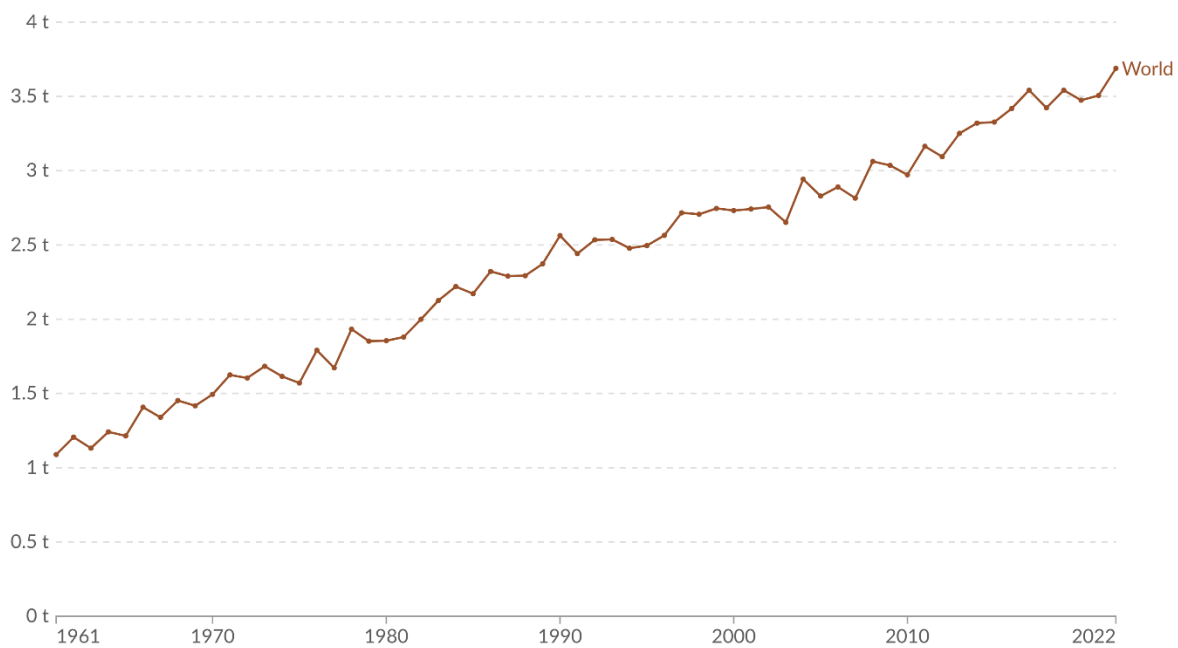
Moreover, carbon dioxide greatly benefits crop production, as atmospheric carbon dioxide works as aerial fertilizer.⁸ Higher atmospheric carbon dioxide levels assist plant growth and resistance to drought and heat. It is for this reason that greenhouses often pump in elevated amounts of carbon dioxide.

Figures 2a, 2b, and 2c- Global Crop Yields for Wheat, Corn, and Rice 1961-2022

Wheat: Yield



Yields are measured in tonnes per hectare.



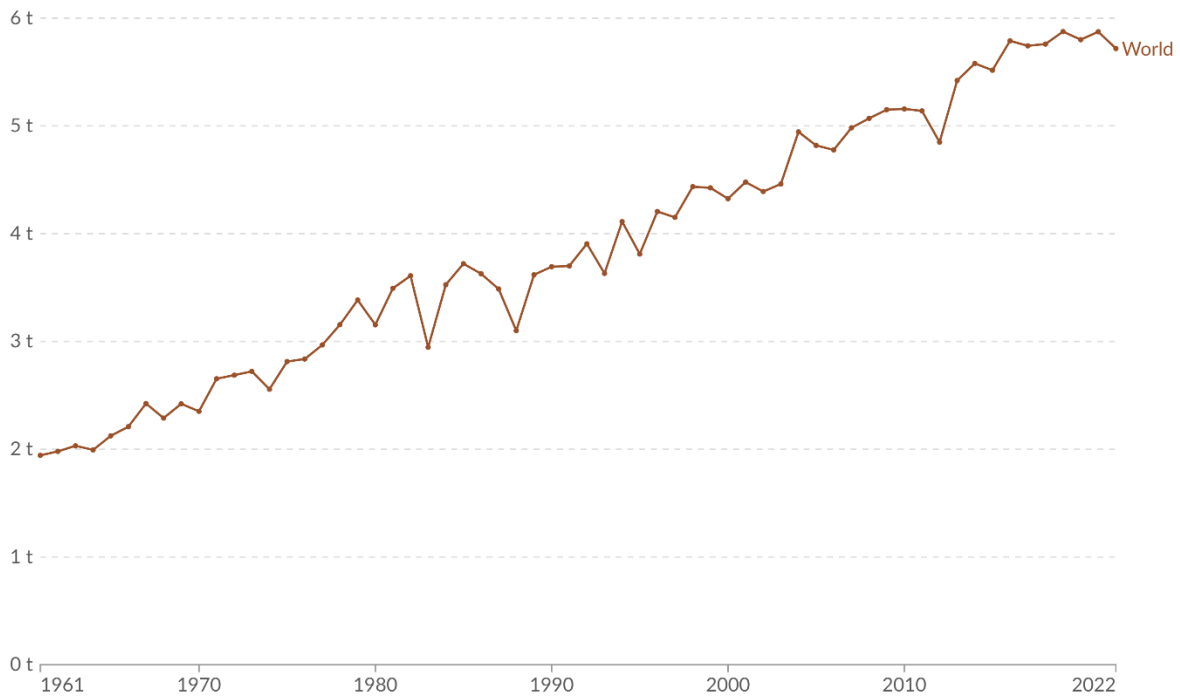
Data source: Food and Agriculture Organization of the United Nations; Bayliss-Smith & Wanmali (1984); Brassley (2000); Broadberry et al. (2015)

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Corn: Yield



Corn (maize) yields are measured in tonnes per hectare.



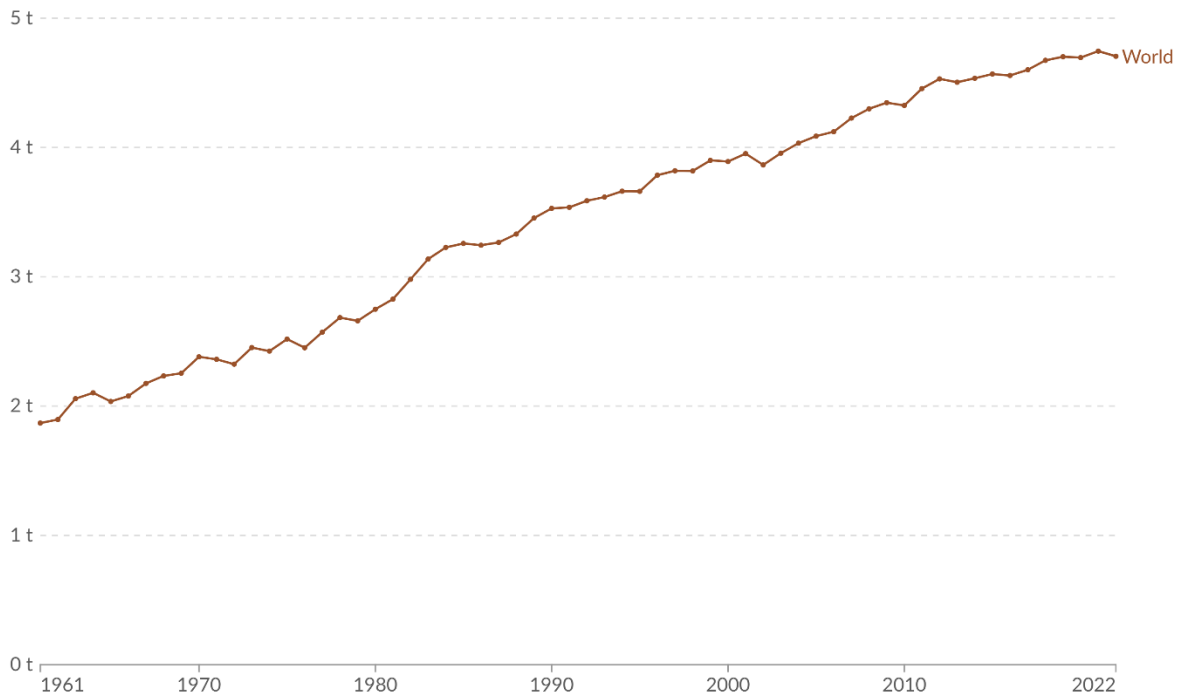
Data source: Food and Agriculture Organization of the United Nations; USDA National Agricultural Statistics Service (NASS)

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Rice: Yield



Yields are measured in tonnes per hectare.



Data source: Food and Agriculture Organization of the United Nations

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