



Conventional & Organic Cotton Production



Cotton is a globally important crop, and its production methods—organic and conventional—are often discussed in the context of sustainability. While both systems share some common agricultural practices, they differ in their approach to pest management, seed selection, and certification requirements. Understanding these similarities and differences is essential for making informed choices about cotton sourcing and sustainability.

How are organic and conventional cotton production similar? How are they different?

The distinction between organic and conventional cotton can often be misunderstood or misconstrued in sustainability conversations. In reality, the two production systems can have many similarities but also have their own unique challenges and differences. Both production systems can utilize similar growing practices; however, organic cotton production uses a more limited set of pest management tools, while conventional cotton production can draw on a broader range of options, including chemical technologies.

Organic cotton growers cannot use biotech (GMO) seeds and, in most cases, cannot apply synthetic pesticides unless such substances are approved and other more preferred methods are insufficient to prevent or control the target pest^{1,7}. Technically, organic cotton must be grown on land that has been free of prohibited substances for three years³. In the U.S., organic cotton is certified by accredited third-party organizations to meet national or international standards to ensure compliance to the United States Department of Agriculture (USDA) organic standards.²

Conventional cotton growers may plant biotech seeds or seeds from traditional breeding. They may use synthetic or natural nutrients and pesticides, or a combination of natural and synthetic inputs. Conventional growers may also plant biotech (GM) seed, developed to improve pest or herbicide tolerance. These traits can reduce the need for pesticide applications and help preserve yields.

Beyond these criteria, both U.S. conventional and organic cotton growers are subject to federal regulations and able to utilize the full range of best farming management practices.

| Organic | <input checked="" type="checkbox"/> |
|--------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Conventional | <input checked="" type="checkbox"/> |

Does conventional cotton require more water than organic?

Typically, no. A crop's production system (organic or conventional) does not determine its water requirements. Water needs are dictated by the farming region and the specific cotton variety planted. Both production systems can benefit from soil health practices—such as regenerative agriculture, cover crops, and diverse crop rotations—which help increase soil organic matter and water-holding capacity.⁴

¹ Electronic Code of Federal Regulations (eCFR). (2020). National Organic Program, 205.105 Allowed and prohibited substances, methods, and ingredients in organic production and handling. <https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=9874504b6f1025eb0e6b67cadf9d3b40&rgn=div6&view=text&node=7.3.1.9.32.7&idno=7>

² Electronic Code of Federal Regulations (eCFR). (2020). National Organic Program, 205.670. Inspection and testing of agricultural products to be sold or labeled as "100 percent organic", "organic", or "made with organic (specified ingredients or food groups)". <https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=9874504b6f1025eb0e6b67cadf9d3b40&rgn=div6&view=text&node=7.3.1.9.32.7&idno=7>

³ Electronic Code of Federal Regulations (eCFR). (2020). National Organic Program, 205.202. Land requirements. <https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=9874504b6f1025eb0e6b67cadf9d3b40&rgn=div6&view=text&node=7.3.1.9.32.7&idno=7>

⁴ Soil Health Institute (2021). What are the Four Steps to Healthier Soils? <https://soilhealthinstitute.org/news-events/what-are-the-four-steps-to-healthier-soils/>

Do organic and conventional cotton have comparable fiber yields?

In general, no. Organic cotton typically yields less fiber per acre⁵. Figure 1 shows the historic yield difference between conventional and organic cotton in the U.S.

U.S. Cotton Yield (Organic & Conventional)

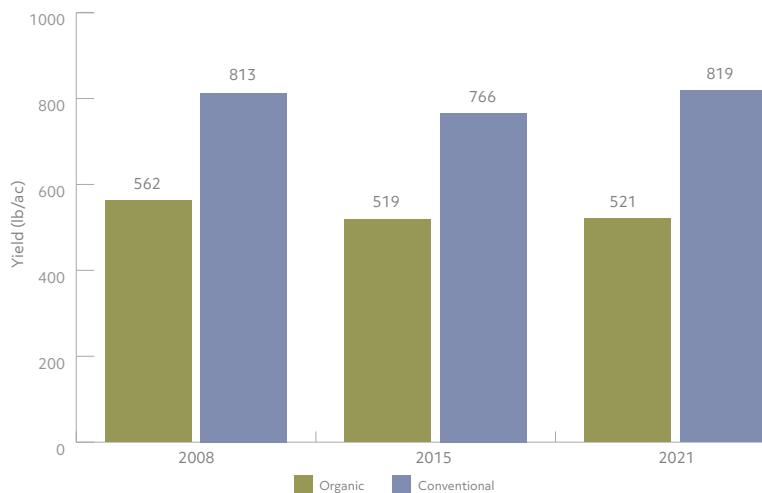
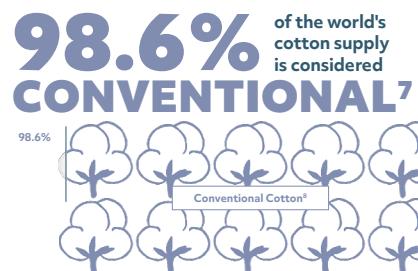


Figure 1. Historical U.S. organic and conventional cotton yields.
Source: USDA NASS dataset (<https://quickstats.nass.usda.gov/>)



Does organic cotton allow for pesticide use?

In short, yes. In the U.S., there is an approved list of pesticides for organic production, derived from both synthetic and non-synthetic sources³. However, these are only allowed if other preferred methods are insufficient to control the target pest⁶.

Overall, organic producers have a more limited set of tools for pest management, relying heavily on natural, non-synthetic materials (e.g., garlic, pyrethrum, neem oil, and biological controls³). Reliable pest control is essential for all cotton producers, as preserving yield helps minimize impacts such as greenhouse gas emissions and water consumption while meeting global demand for food and fiber.

How is certification different for organic and conventional cotton?

Certification and traceability schemes exist for both organic and conventional cotton to ensure adherence to environmental and social standards. Organic cotton is certified by accredited third-party organizations to meet national or international organic standards. Conventional cotton producers may participate in voluntary sustainability programs which provide verified, responsibly produced cotton with supply chain traceability options.⁸

For more information on cotton production methods and sustainability, visit cottontoday.cottoninc.com

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⁵ United States Department of Agriculture NASS QuickStats. (2020). Agricultural Census: Cotton Yield and Production Data. <https://quickstats.nass.usda.gov/>. For more information on using the USDA NASS database see USDA tutorials page. <https://quickstats.nass.usda.gov/tutorials>

⁶ Electronic Code of Federal Regulations (eCFR). (2020). 205.206 Crop pest, weed, and disease management practice standard. https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=46e48bfd5a4c6cf4c26ffcd68cbd48af&mc=true&n=pt7.3.205&r=PART&ty=HTML#se7.3.205_1206

⁷ Organic Cotton Market Report. (2022). Textile Exchange. Textile-Exchange_OCMR_2022.pdf

⁸ Ferrigno, S. (2025). The Cotton & Sustainability Guide. MCL News & Media. Edited by John Mowbray and supported by Cotton Incorporated. https://cottontoday.cottoninc.com/wp-content/uploads/2025/06/Cotton_Guide_2024-2025.pdf