



Pesticides & Cotton Production

Crop Protection and Agriculture

Without the use of pesticides, farmers would not be able to provide a nutritional, plentiful and affordable food supply for a rapidly growing global population. In fact, it's estimated that over 80% of the global cotton crop could be lost to insects, fungi and weeds¹ without them.

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What is cotton's share of worldwide pesticide use?

Cotton is not the largest user of agricultural pesticides—it's actually one of the lowest, accounting for less than 3.9% of the world's pesticide sales², despite some erroneous claims.

Global Pesticide Sales By Crop²

Crop	Share of Global Pesticides Sales
Soybeans	17.3%
Corn	15.2%
Other fruits and vegetables	13.4%
Other crops	13.3%
Wheat	6.8%
Rice	6.1%
Grapes/vines	4.6%
Fallow-land/set-aside	4.2%
Pome-fruits	4.1%
Cotton	3.9%
Citrus	3.3%
Sugar cane	3.0%
Potatoes	2.8%
Canola Oil	2.0%

1. Oerke, E.-C., & Dehne, H.-W. (2004). Safeguarding production—losses in major crops and the role of crop protection. Crop Protection, 23(4), 275–285. <https://doi.org/10.1016/j.cropro.2003.10.001>
2. ICAC Cotton Production Data Portal. Data Book 2023. <https://icacdatabook.de.r.appspot.com/>

How much pesticides are used per pound of cotton produced in the U.S.?

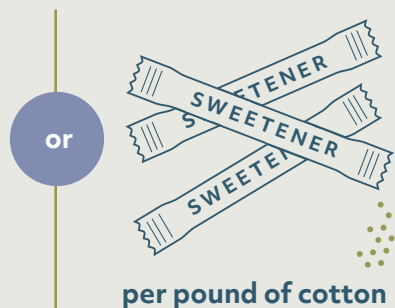
According to the USDA, in 2021 the following amounts of pesticides were applied to each acre of cotton:

0.4
Pounds per acre of
insecticides³

1.2
Pounds per acre of
harvest aids³

2.5
Pounds per acre of
herbicides³

0.03
Pounds per acre of
fungicides³



The average acre in 2021 produced 819 lbs/acre NASS USDA³. That means **less than one tenth of one ounce** of pesticides were used per pound of cotton produced. Or, to illustrate that in a more practical way, the same amount as about three packets of artificial sweetener.

Plus, with improvements in biotechnology, new cotton varieties, and Integrated Pest Management (IPM) programs, the number of insecticide applications has dropped more than 50% in the United States in the last 30 years⁴.

Why is cotton regulated as a food crop?

Because cotton is much more than the fiber you're familiar with. There are many economically important by-products of cotton, such as cottonseed, cottonseed oil, cottonseed meal, and cotton linters. Since these are used in human and animal foodstuffs, cotton is treated just like other food crops such as soybeans, corn or wheat by the U.S. Food and Drug Administration⁵.

What is Bt-cotton and why is it important to the cotton industry?

Bt, or *Bacillus thuringiensis*, is a soil dwelling bacteria that produces insecticidal proteins which are important for both organic and conventional cotton growers. Organic growers may apply the protein topically to their crops⁶. Conventional growers use cotton varieties that have been engineered to produce the Bt proteins internally, to bolster resistance to damaging insects.

Does certified organic cotton production allow for pesticide use?

In short, yes. As an example in the U.S., there is an approved list of pesticides for organic production that are derived from both synthetic non-synthetic sources⁷. Organic cotton production allows for pesticides such as peracetic acid, copper oxychloride, or ferric phosphate⁷ provided that other more preferred methods are insufficient to prevent or control the target pest⁶. When following product labels, both non-synthetic and synthetic pesticides can be used responsibly to minimize both human health and environmental impacts. By preserving yield, these products are critical for minimizing other impacts such as greenhouse gas emissions and water consumption while providing enough food and fiber to meet a growing global demand.

3. United States Department of Agriculture NASS QuickStats. (2021). Cotton Chemical Use, Yield and Production Data. <https://quickstats.nass.usda.gov/>
4. National Cotton Council Beltwide Cotton Conference Proceedings 1987-2016 & Mississippi State University Cotton Insect Losses Reports.
5. Code of Federal Regulations (CFR). (2024). 21 CFR 172.894 172.894 Modified cottonseed products intended for human consumption. <https://www.ecfr.gov/current/title-21/section-172.894>
6. Code of Federal Regulations (CFR). (2024). 7 CFR 205.206. 205.206 Crop pest, weed, and disease management practice standard. <https://www.ecfr.gov/current/title-7/subtitle-B/chapter-I/subchapter-M/part-205/subpart-C/section-205.206>
7. Code of Federal Regulations (CFR). (2024). 7 CFR 205.105. 205.105 Allowed and prohibited substances, methods, and ingredients in organic production and handling. <https://www.ecfr.gov/current/title-7/section-205.105>



For more information about pesticide use in cotton, visit cottontoday.cottoninc.com