

Organic vs. Conventional Foods: What is the Difference?

By:
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Overview

- Defining the terms Organic and Conventional
- USDA guidelines for labeling
- Pesticides
- Health outcomes of Organic / Conventional food
- Recommendations for buying food
- Questions/Discussion

What do you already know?
Please take our survey:



<https://forms.gle/ozhYwyJ4aHqtBZch6>





USDA Definition of Conventional Farming¹

Conventional farming means using seeds that have been changed in a lab to help them grow better, and using chemicals to make sure the plants don't get eaten by bugs or other pests. ¹



Teosinte



Modern Corn

A young green plant with several leaves is growing out of a small mound of dark soil. The soil and plant are being held in a yellow, textured gardening glove. The background is a blurred outdoor scene with warm tones.

Definition of Organic Farming¹

Organic farming means using sustainable techniques that take care of the land, protect wildlife, and help plants grow without hurting the environment.

Who defines organic in the United States?

- The Organic Foods Production Act of 1990 establishes the **National Organic Program (NOP)**.¹
 - Housed within the United States Department of Agriculture (USDA).
 - Rules and regulations created by the public and the National Organic Standards Board.
 - Public feedback gathered via www.regulations.gov.



Defining Organic: USDA



The Organic Seal and Four Organic Labels



USDA United States Department of Agriculture

ORGANIC LABELS EXPLAINED

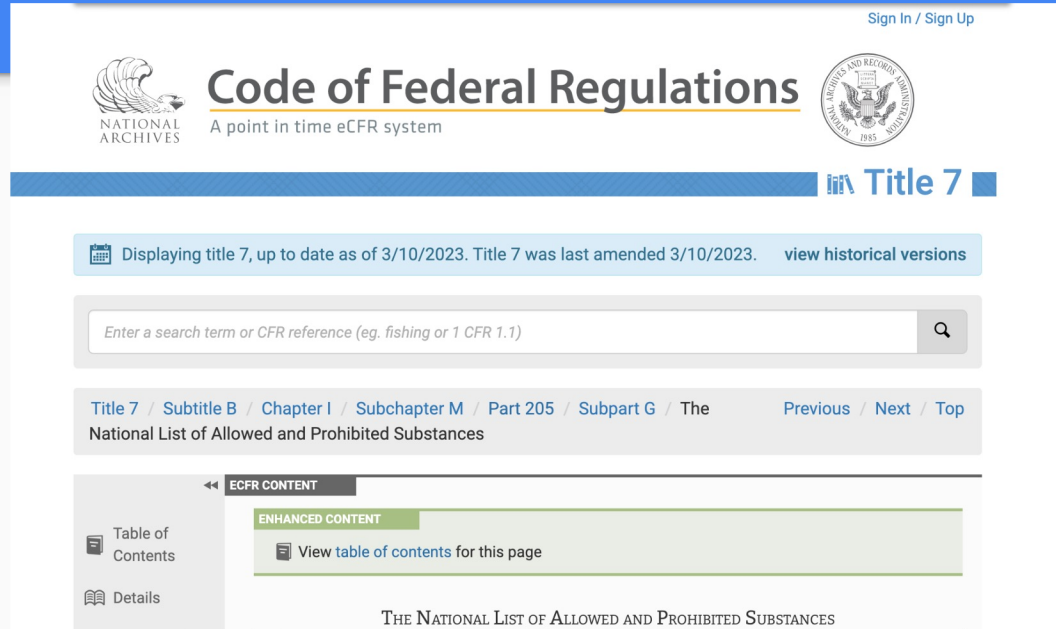
Organic products are labeled according to the percentage of organic ingredients they have. This chart shows what to expect from different labels.

100% Organic	Organic	Made with Organic	Organic Ingredients
<ul style="list-style-type: none"> ✓ Organic seal allowed ✓ 100% certified organic ingredients and processing aids ✓ No GMOs ✓ All ingredients comply with National List of Allowed and Prohibited Substances ✓ Certification required 	<ul style="list-style-type: none"> ✓ Organic seal allowed ✓ 95 % certified organic ingredients ✓ No GMOs ✓ Non-organic ingredients comply with National List ✓ Certification required 	<ul style="list-style-type: none"> ✗ Organic seal NOT allowed; Must specify which ingredients are organic ✓ At least 70% certified organic ingredients ✓ No GMOs ✓ Non-organic ingredients comply with National List ✓ Certification required 	<ul style="list-style-type: none"> ✗ Organic seal NOT allowed; Product can't be described as "organic" ✗ No specific % certified organic ✗ May contain GMOs ✗ Compliance with National List not required ✗ Certification NOT required

Learn more about organic labels at www.ams.usda.gov/organic

Agricultural Marketing Service, April 2018
USDA is an equal opportunity provider, employer, and lender.

National List of Allowed and Prohibited Substances



The screenshot displays the Code of Federal Regulations (CFR) website interface. At the top right, there are links for "Sign In / Sign Up". The main header features the National Archives logo on the left, the text "Code of Federal Regulations" in a large font, and the tagline "A point in time eCFR system" below it. To the right of the header is the official seal of the U.S. Department of Agriculture and Rural Industries. A blue navigation bar below the header contains the text "Title 7".

Below the navigation bar, a light blue box contains the text: "Displaying title 7, up to date as of 3/10/2023. Title 7 was last amended 3/10/2023. [view historical versions](#)".

A search bar is located below this box, with the placeholder text "Enter a search term or CFR reference (eg. fishing or 1 CFR 1.1)" and a search icon on the right.

Below the search bar, a breadcrumb trail reads: "Title 7 / Subtitle B / Chapter I / Subchapter M / Part 205 / Subpart G / The National List of Allowed and Prohibited Substances". To the right of the trail are links for "Previous / Next / Top".

The main content area is titled "ECFR CONTENT" and includes a sidebar on the left with links for "Table of Contents" and "Details". The main content area features an "ENHANCED CONTENT" section with a link: "View table of contents for this page".

At the bottom of the page, the text "THE NATIONAL LIST OF ALLOWED AND PROHIBITED SUBSTANCES" is centered.

<https://www.ecfr.gov/current/title-7/subtitle-B/chapter-I/subchapter-M/part-205/subpart-G/subject-group-ECFR0ebc5d139b750cd>

Pesticides

- A substance used for destroying insects or other organisms harmful to cultivated plants and/or animals
 - Main health concern surrounding non-organic foods
- Classified as fungicides, herbicides, insecticides
- Environmental Protection Agency (EPA) regulates pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act²
- There are over 800 pesticides registered²



Pesticide Data Program (PDP)

- Established in 1991
- Used by Environmental Protection Agency (EPA) to verify pesticide exposures and ensure foods meets the standards for safe products
- In 2021, 99% of sampled products were below the allowable safety limits & 42.5% had no pesticide residue at all
 - Fresh and frozen produce
- ~10,000 samples are tested yearly on both products grown in the U.S. and products imported into the U.S.




Photo from iStock

Pesticide Residue Calculator

- Created by the Alliance For Food and Farming

Use this calculation tool
to see how many servings a man, woman, teen or child could consume
and still not have any adverse effects from pesticide residues.



Start Calculating

FAQ



Calculate
Select a type

Man Woman Teen Child



Safe Fruits and Veggies
Calculate
Select a fruit or veggie

Apples Bell Peppers Blueberries Carrots Celery
Cherry Tomatoes Cucumber Grapes Hot Peppers Kale

Pesticide Residue Calculator

servings of **apple** in one day

without any effect even if the **apple** have the highest pesticide residue recorded for **apple** by USDA.



A **man** could consume

1190



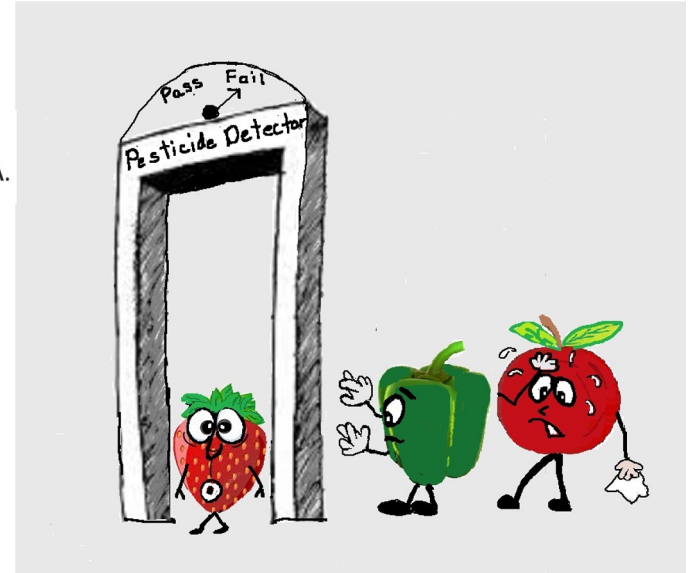
A **woman** could consume

850








A **child** could consume

340

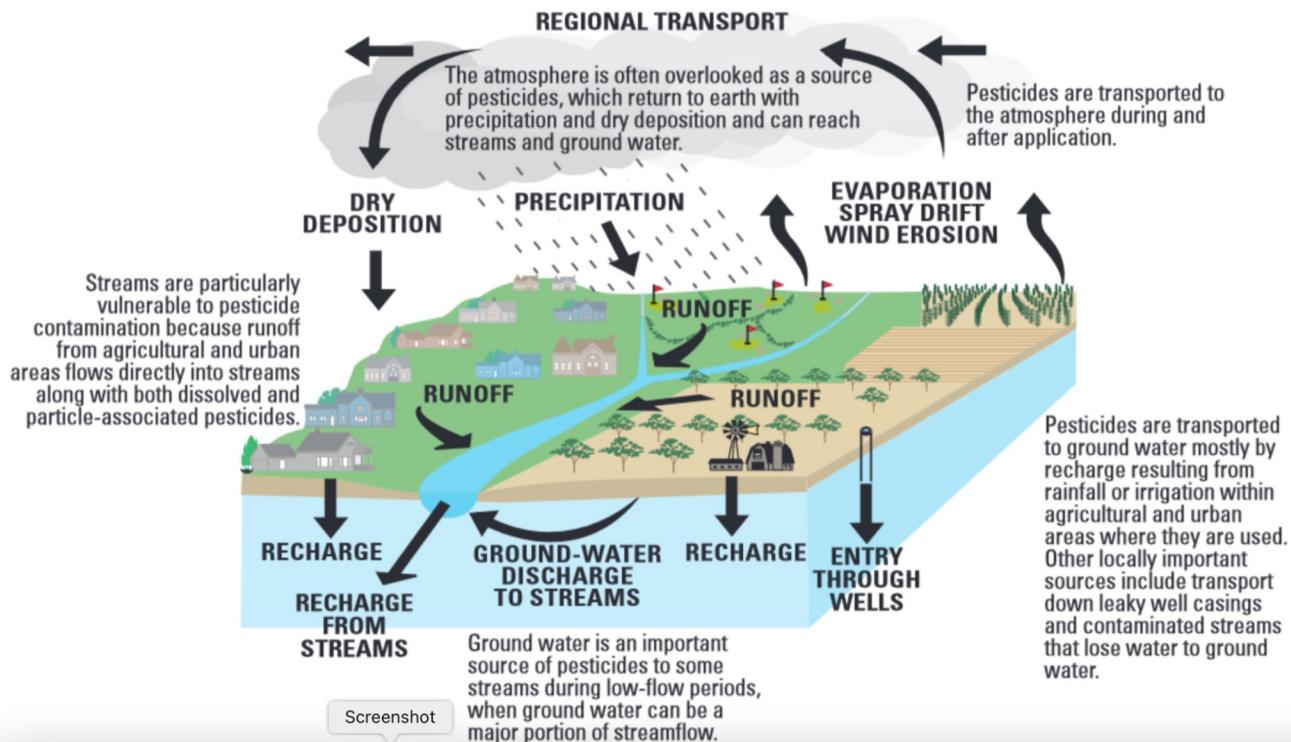


How is the environment affected?²¹

	 Organic	 Conventional	References
 Yields (per hectare)	↓	↑	Seufert et al., 2012 Seufert and Ramankutty, 2017 Meemken and Qaim, 2018 Bai et al., 2018; Wittwer et al., 2021 Purnhagen et al., 2021
 Land use (expand the area of croplands)	↑	↓	Searchinger et al., 2018 Purnhagen et al., 2021 Paarlberg, 2022
 Indirect CO ₂ emissions	↑	↓	Searchinger et al., 2018 Purnhagen et al., 2021 Smith et al., 2019 Clark, 2020
Direct CO ₂ emissions	↓	↑	Küstermann et al, 2008 Searchinger et al., 2018 Smith et al., 2019

Pesticides are transported throughout the environment

By [Water Science School](#) 1995 (approx.)



Once a pesticide has been released into the environment, it can be broken down by:

- exposure to sunlight (photolysis)
- exposure to water (hydrolysis)
- exposure to other chemicals (oxidation and reduction)
- microbial activity (bacteria, fungi, and other microorganisms)
- plants or animals (metabolism)

What is Healthier?



- Marginal known health benefits of organic produce over conventional³⁻¹²
- Mixed Results!
 - 55% of the studies we looked at reported potential lower risk of cancer when increasing whole, non-processed *organic foods*^{6,7,8}
 - 44% reported no association between lower pesticides (organic food) *reducing* risk of certain cancers^{3,4,5}
- Pesticide levels in both organic and non organic foods are within the allowable safety limits for humans when consumed.

What is Healthier?

- Eating more servings of fruits and vegetables that have less pesticides may reduce risks of heart disease and overall mortality.¹⁰
- Eating a diet that has higher overall concentrations of pesticides may reduce benefits of eating fruits and vegetables.
- Those that exercised more, had normal BMIs, lower tobacco and alcohol use, had higher socioeconomic status had better health outcomes related to cancer, mortality, and heart disease overall.

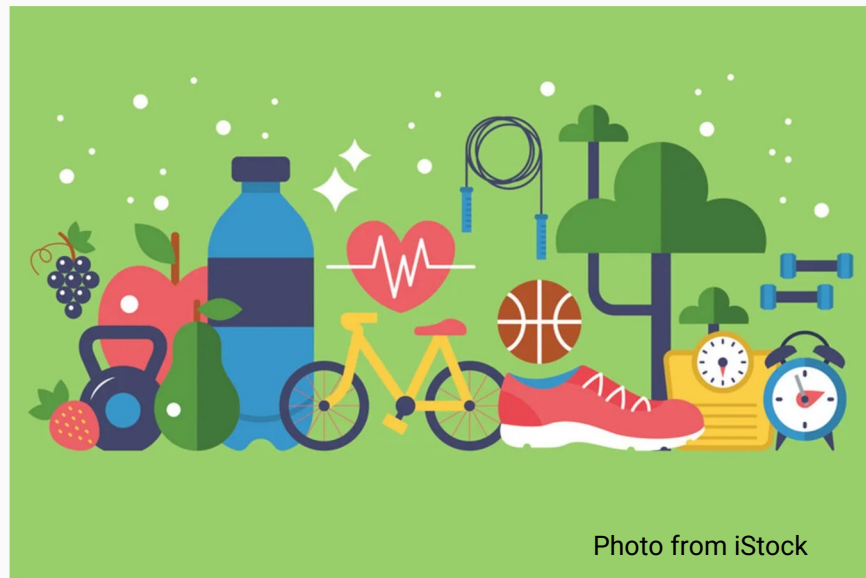


Photo from iStock



Recommendations

- Consume mostly whole, unprocessed foods
 - Regardless of your choice to buy organic or conventional, aim to add a variety of fruits and vegetables daily
 - Choose most affordable foods dependent on your situation
 - Choose seasonal produce
 - If possible, buy local sourced foods to support local farmers and communities
 - Utilize food pantries, if needed.
-
- **Safe hygiene:** Wash your hands for 20 seconds; Wash your food preparation surfaces, utensils and countertops; Wash and scrub your produce; Cut off any damaged or bruised areas¹⁹

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Questions and Answers



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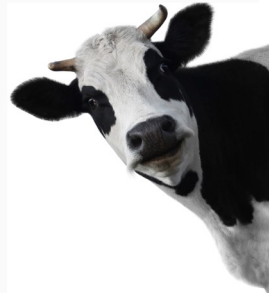


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What did you learn?
Please take our survey:



<https://forms.gle/ozhYwyJ4aHqtBZch6>