Are organic foods healthier than conventional foods?

Researchers at the Stanford University Medical School conducted the most comprehensive independent study to date “Are Organic Foods Safer or Healthier Than Conventional Alternatives” in 2012. For their study, the researchers sifted through thousands of papers and identified 237 of the most relevant to analyze. They found nothing to support the notion that organic food, on the whole, is safer or more nutrient dense or vitamin rich. The researchers found organic food had a 30 percent lower risk of pesticide residues but the residue levels on the conventional foods was well within safety limits.

“Some believe that organic food is always healthier and more nutritious. We were a little surprised that we didn’t find that,” said Crystal Smith-Spangler, a Stanford Medicine instructor and one of the paper’s authors.

The only nutrient found to be significantly higher in organic food was phosphorous, but that was considered an inconsequential advantage, since few people have phosphorous deficiency.

The Stanford findings echoed a review of 137 studies drawn from more than 50,000 papers covering 50 years of research by scientists from the London School of Hygiene and Tropical Medicine published in the American Journal of Clinical Nutrition in 2009. The study was commissioned by the UK Food Standards Agency. The group’s blunt conclusion: “there is no evidence of a difference in nutrient quality between organically and conventionally produced foodstuffs.”

In December 2016, the research arm of the European Parliament released a wide-ranging report examining existing scientific evidence regarding various aspects of organic food and agriculture. The report noted that often, people who eat organic foods are the same people who have healthier diets to
begin with, making it difficult to gauge the impact of organic foods on individual health. The report largely acknowledged that there no proven advantages of organic foods:

In conclusion, there is a lack of data from well-designed studies (prospective, long-term duration, accurate data in particular for dietary factors and sources, i.e. conventional or organic) involving a sufficiently large population.

However, the report also offered its support for the idea that organics offer an advantage over conventional foods in terms of exposure to pesticides:

Although the scientific evidence is incomplete, substantial data point to the developing brain being extremely vulnerable to pesticide exposure…As a consequence of reduced pesticide exposure, organic food consequently contributes to the avoidance of health effects and associated costs to society, as well as other hidden and external costs related to pesticide use, as recently reviewed and suggested to be greatly underestimated.

There have been as studies claiming that organic foods offers health benefits. A 2018 study of 70,000 French adults published in the Journal of the American Medical Association (JAMA) surveyed consumers between 2009-2016, concluding: “A higher frequency of organic food consumption was associated with a reduced risk of cancer.”

The cohort study was widely circulated by organic farming proponents as ‘proof’ of the benefits of organic food, but its conclusions were challenged by independent scientists. 78 percent of the participants were women, limiting the importance of the results since no children and few men were included. The data also showed an unusual anomaly: only participants who ate the most organic food lowered their risk for cancer and only for two cancers postmenopausal breast cancer and non-Hodgkin’s lymphoma (NHL).

This risk reduction only applied to people who consumed a “low to medium quality diet,” as Yale University neurologist Steven Novella pointed out:

….At face value it seems that if you have a good diet, switching to organic adds nothing. If you have a low to medium quality diet, only then was eating organic food associated with some lower cancer risk.

An analysis of the study suggests the benefits are extremely tiny, reducing overall cancer risk by 0.5 percent, as Gideon Meyerowitz-Katz, a chronic disease epidemiologist at the University of Wollongong in Australia, noted. “[S]witching most of your diet to organic, at huge cost, for the rest of your life, to potentially reduce your risk of cancer by less than 1% is a bit of a big ask.”

The findings were also at odds with a much larger 2014 investigation of more than 600,000 UK women that found, “….little or no decrease in the incidence of cancer associated with consumption of organic food, except possibly for non-Hodgkin lymphoma.”

There have been contested claims that organic food offers nutritional benefits. For example, two meta-studies, on organic meat and milk, published in the British Journal of Nutrition in February 2016, claimed
that organic milk and meat had more omega-3 fatty acids, a debatable benefit; organic meat had lower concentrations of acids linked to cardiovascular disease; and a few other minor differences of questionable benefit. Helpful higher iodine levels were found in conventional foods and organic milk yields were 23% lower.

Newcastle University professor of ecological agriculture Carlo Leifert oversaw the meta-studies. Leifert claimed the studies were “further evidence of the health benefits of organic food,” and should prompt people to reconsider their food choices.

Leifert’s key consultant in this research project was Charles Benbrook, a controversial consultant to the organic industry. A significant chunk of the academic research and the overwhelming majority of media citations can be traced to Benbrook. Benbrook is an economist and not a scientist, although news accounts frequently misrepresent his credentials.

Leifert and Benbrook authored a controversial analysis on the alleged superior safety profile of organic produce. In a 2014 *British Journal of Nutrition* paper, the pair reviewed 340 studies found organic crops had higher antioxidants, lower cadmium concentrations and lower incidence of pesticide residue. The meta-study was widely criticized by scientists, who claimed the researchers selectively used data and presented contested claims of health benefits as if they were part of a scientific consensus.

Many of the researchers cited in the Leifert-Benbrook study have connections to the organic industry. Leifert himself owns an organic farm in Greece and is a vocal public advocate for the claim that organic foods provide substantial health benefits when compared to conventional products.

Benbrook has been a long-time paid advocate and advisor to the organic industry. From 2004-2012, he was “chief scientist” with the Organic Trade Association’s research arm, The Organic Center, although he is not a scientist but an economist. OTA is the organic industry’s most prominent trade and lobby group. His oft-cited 2008 white paper prepared as a promotional analysis for The Organic Center, reviewed 97 published studies, concluding that “organically grown plant-based foods are 25% more nutrient dense, on average, and hence deliver more essential nutrients per serving or calorie consumed.” Benbrook was subsequently awarded the organization’s first Award of Excellence for “supporting the science behind the benefits of organic food and farming”.

Benbrook joined Washington State University in 2012 as an adjunct professor in a position funded by the organic industry. Most of the research cited in the British Journal of Nutrition meta-review was financed by organic companies and lobbyists. According to the *New York Times*, “The European Commission, the executive body of the European Union, and the Sheepdrove Trust, a British charity that supports organic farming research, paid for the analysis, which cost about $600,000.”

The university severed its relationship with Benbrook in 2015 after his funding sources become known. Benbrook had not disclosed this information to the university, journal or the public, an ethics violation that played a key role in his ouster.

Benbrook is now a consultant, most recently for the *Environmental Working Group*, a critic of conventional
farming and crop biotechnology, and is now on the The Organic Center’s “science advisory” board.

There also have been numerous reports issued by advocacy groups suggesting that consuming organic food lowers exposure to harmful pesticides. Friends of the Earth (FOE) released one such study in 2019 that monitored 16 people from four families over two weeks as they consumed an all-organic diet. Without exception, scientists say an extremely limited sample size and lack of study controls render such data useless. However, the ‘research’ was promoted by many ideologically sympathetic media outlets, including as Civil Eats, which wrote that it “breaks new ground.”

Not all the distortions about pesticide exposure originate with skeptics of biotechnology and organic promoters. Some critics of organic agriculture, including biotechnology enthusiasts, have argued that organic farmers use greater quantities of toxic pesticides than conventional farmers.

This assertion is simplistic. While organic farmers are prohibited from using synthetic pesticides that might be safer than some natural chemicals, conventional and organic crops are often treated with the same pesticides. Also, organic farmers tend to use fewer crop protection products. The more important point, however, is that nearly all pesticides in use today are considered “essentially non-toxic” by the EPA, as this chart provided by plant scientist Steve Savage illustrates:

Responding to widespread misconceptions, in April 2021, the United Nation’s Food and Agricultural Organization issued a booklet analyzing claims associated with the organic industry. It concluded that organic food is a certification and marketing standard and not a health or environmental standard.
Organic food is often seen by consumers as healthy, tasty and environmentally friendly, but the organic food certification is not necessarily a synonym for safe food. Organic refers to a product that has been produced in accordance with certain standards throughout the production, handling, processing and marketing stages; it does not refer to the characteristics and properties of the finished product.