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The Lowdown on Pesticides in Organic and Conventional Food

What to be concerned about, plus advice for shopping smart.

By **Bridget Shirvell**

June 07, 2019



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Standing in the grocery story staring at the shelves of canned tomatoes, gazing at the oat milk, scanning the packages of quinoa, you're faced with a quandary—buy organic or not? In a dream world it's a question we'd never have to even ask, we'd

all have access to fresh, local food, grown in a way that's good for us, the farmer and the environment. In reality, there is no easy answer, and this is especially true if you want to buy organic primarily to avoid pesticides. Why? Because something that says it's organic doesn't mean it was produced without the use of pesticides.

Here's what you actually need to know about the use of pesticides on both conventional and organic food.

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What the Organic Food Label at Your Supermarket Means

For food on your grocery shelf to be certified organic it has to meet a certain set of standards that are managed by the Department of Agriculture's (USDA's) National Organic Program. At the most basic level this means the farmer produced the food in a way that promotes ecological balance, conserves biodiversity and is free of sewage sludge (found in many conventional fertilizers), genetically Modified Organisms (GMOs), and most chemicals and pesticides.

There are four different levels of organic labeling you'll find at the supermarket. To be labeled "100% Organic" means the product contains only organic ingredients (and that animals on organic farms eat only organic fed). The "Organic" label means the product contains at least 95% organic ingredients. Both "100% Organic" and "Organic" can use the USDA Organic seal on their packaging. Then there is the "Made with Organic Ingredients" label that means at least 70% of the ingredients are organic. Other products can use the term "organic" on the back nutrition information label to identify individual organic ingredients.

One of the most common misconceptions about organic is that the food is free of all pesticides, but in reality organic food does sometimes contain trace amounts of pesticides and organic farming does allow for the use of some pesticides.

If Both Organic and Conventional Foods Have Pesticides, Which Should I Buy?

Even though both organic and conventional food contains pesticide residue (pests happen, after all), organic grown food has been found to contain significantly less pesticide residue and much of those pesticides are natural. "The very few pesticides allowed for use in organic are not the ones we typically think of as toxic materials since they are for the most part extracts from natural materials," says Jay Feldman, executive director of the nonprofit Beyond Pesticides.

On most organic farms, farmers will use pesticides as a last resort instead using something called 'PAMS' strategy (prevention, avoidance, monitoring and suppression) to deal with pests. When the use of pesticides is needed, organic regulations only allow for the use of a very limited list of pesticides. Most of these, as Feldman said, are naturally-based and the few exceptions to the "no synthetics" rule have to meet a set of requirements set by the National Organic Standards Board. Every five years, the board reviews the pesticide list to ensure they are not harmful to the health of humans or the environment, that they are necessary to the production or handling of the product and are consistent with organic production in general.

"They are on the National List of Allowed and Prohibited Substances and subject to rigorous review established by the Organic Foods Production Act to ensure no adverse health and environment effects, compatibility with organic systems, and essential to the production of the crop for which it is being used. Just because a pesticide can be used under federal pesticide law does not establish its allowance under organic law, which requires that these additional criteria are met," Feldman said.

According to Dawn Undurraga, nutritionist at the [Environmental Working Group](#), there are less than 40 synthetic substances that have passed the National Organic Standards Board's review. Those include some alcohols, hydrogen peroxide, ammonium carbonate, soaps, newspaper mulches, and things like fabric covers, sticky traps, hot pepper mixes, lady bugs, or beetles. You can check out the full list on [Cornell University's website](#).

"You can see an example of how rigorous the National Organic Standard Board's review is from the petition to use oil of mustard, also known as, allyl isothiocyanate, a naturally occurring compound found in [broccoli](#), [brussel sprouts](#), [mustard](#), and

more to kill roundworms that attack plants. Oil of mustard is used as a food ingredient and additive and considered Generally Regarded as Safe for use in conventional food, yet the Organic Standards Review Board still has not allowed its use as an organic pesticide on organic crops, even after review in 2014, 2015, 2018 and 2019. The substance remains under review," Undurraga said.

Finally, while it's hard to quantify, organic farmers can't control the weather and if they are located near conventional farms it is possible that pesticides can drift from one farm to another.

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Is Organic Food Safer?

Scientifically, there's still so much debate. While the Federal Drug Administration (FDA) allows for the use of certain synthetic pesticides on conventional food and has determined them safe, there are an increasing number of studies that link chemical based pesticide exposure, even in small amounts to health issues such as birth defects, liver disease, headaches, cancer and more recently even to a possible increased risk of autism. A study published earlier this year in the journal Environmental Research, found that eating an organic diet quickly and dramatically reduces exposure to some pesticides.

New York City-based Dr. Robert Graham who owns the integrative health practice, FRESH Medicine and also underwent 600 hours of culinary education, graduating from the Natural Gourmet Institute's Chef's Training Program, called out two studies. A 2012 study in the Annals of Internal Medicine that concluded a lack of strong evidence that organic food is more nutritious but found that the consumption of organic food reduced exposure to pesticides and antibiotic resistant materials. And a JAMA Internal Medicine study from December 2018 that found a reduction in the risk of cancer among individuals that consumed a large amount of organic food.

"A principal of public health is the precautionary health," Graham says. "The burden of scientific proof doesn't have to be there for us to adopt healthier behavior even if there isn't enough research to point us in the direction that it is safer."

What Should I Buy?

There's really no one answer as it will be slightly different for everyone. For years some of the common complaints around organic food were that it can be hard to find or is often more expensive than conventional food. But it's now possible to find organic food at most supermarkets and even box stores, and there's some evidence to suggest that the price differences are stabilizing. In 2015, Consumer Reports found that while organic items are often higher on average than their conventional version, prices range dramatically depending on where you shop and at some places organic food is cheaper. EWG researched whether or not the

average American could afford to eat organic and found the answer may come down to more than just budget-lifestyle choices are also a factor.

If you're looking to avoid pesticides and buy food that is good for you, the environment, and farmers, the best bet is going to your local farmers' market or buying directly from the farm. Even if a farmer isn't organic certified they often will follow organic practices which you can find out about when you talk to them. But it would be hard to buy all your food from a local farmers' market or even all organic food at a supermarket.

Graham said he strongly encourages his patients to eat organic when possible especially when it comes to animal proteins. For produce he recommends starting by buying organic the foods on the EWG's Dirty Dozen list, which in 2019 includes, strawberries, spinach, kale, nectarines, apples, grapes, peaches, cherries, pears, tomatoes, potatoes, celery, and hot peppers.



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