



The Benefits of Organic Dairy

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Why should I choose organic dairy?

Dairy's role as a potential contributor to a healthy diet is supported by the American Academy of Pediatrics and the American Heart Association. The U.S. dietary guidelines for Americans is 2 to 3 cups of milk or its equivalent per day. Equivalents can be found in all dairy products including yogurt, cheese, butter, and even ice cream.

People love dairy: milk, yogurt, cheese, ice cream, butter, pizza, and more are all favorites in our kitchens and restaurants. But when it comes to organic versus conventional, not all dairy is created equal.

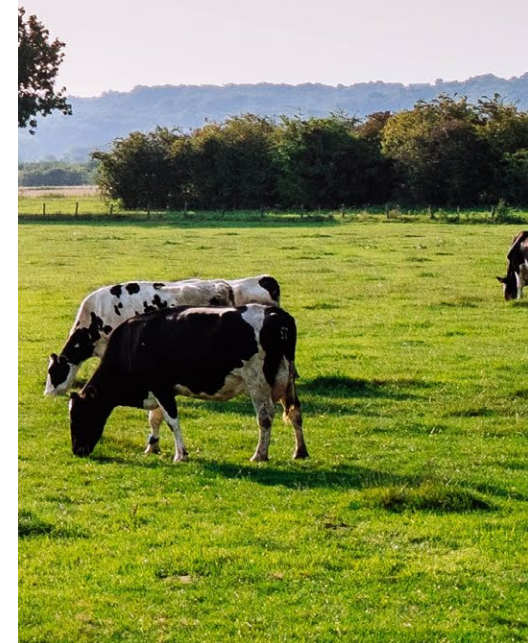
In this report we'll take you through those differences: starting with a new study showing that organic is an easy way to avoid contaminants in milk, giving consumers an option that doesn't include even trace amounts of pesticides, antibiotics, or synthetic growth hormones.

We will highlight what's special about the way organic dairy is produced, and why those differences are important for the health of cows, consumers, and the environment.



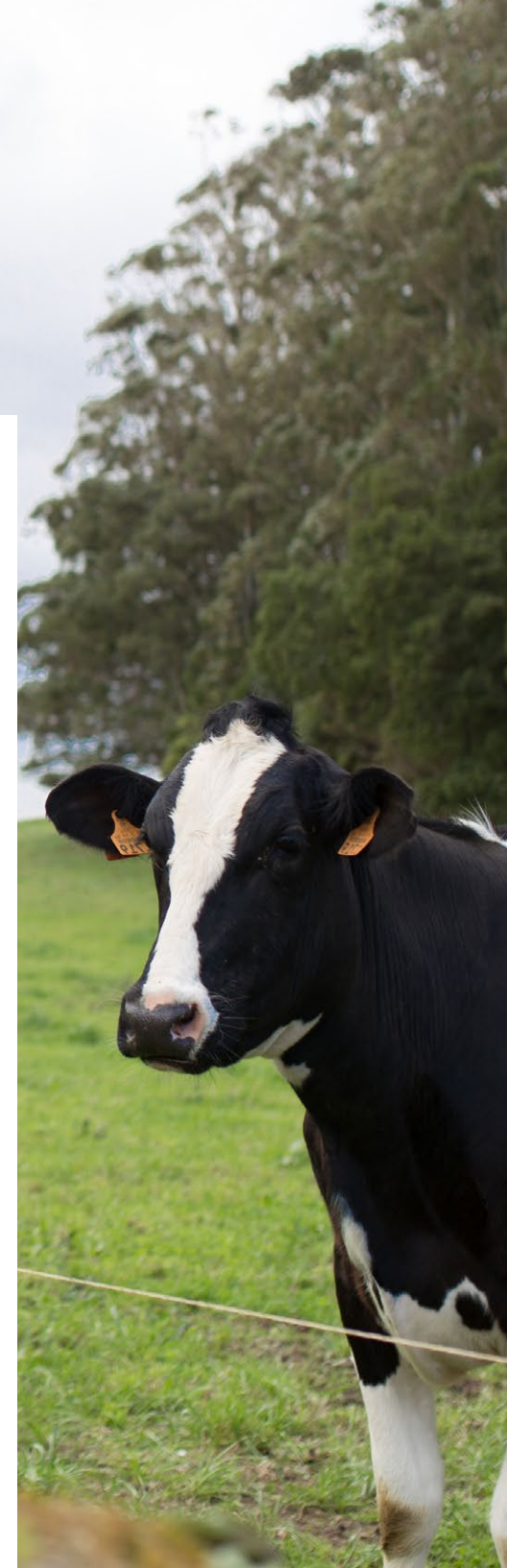
Dairy has a wide range of benefits for your health

- ✓ Dairy is an excellent source of protein and important vitamins and minerals, including some that are often under-consumed such as calcium, potassium and vitamin D.
- ✓ Dairy promotes healthy growth in children by providing a number of nutrients that are required for building strong bones and the proteins needed for muscle building.
- ✓ Dairy helps maintain lean muscle mass and a healthy weight. Dairy provides a good source of essential amino acids that can maintain healthy muscles, and dairy consumption has been linked with lower risk of obesity.
- ✓ Dairy reduces the risk of bone fractures especially in children.
- ✓ The risk of heart disease and stroke may actually be decreased by dairy consumption.



Not all dairy is created equal: The Organic Benefit

- ✓ New research shows that organic is an easy way to avoid antibiotic, synthetic growth hormone, and pesticide residues in your milk.
- ✓ Organic milk has higher levels heart-healthy omega-3 fatty acids.
- ✓ Because antibiotics aren't used on organic systems, organic is an important part of the solution to preventing antibiotic resistant diseases.
- ✓ Organic cows are pasture-raised with a focus on the health and natural behavior of livestock.
- ✓ Organic dairy means more cows on pasture, which helps mitigate climate change.



New study shows that choosing organic is an easy way to avoid pesticide, antibiotic, and synthetic growth hormone residues in milk.

A recent study published in *Public Health Nutrition* shows that organic milk does not contain any residues of currently used pesticides or antibiotics, and has lower levels of growth hormones than conventional milk. This means that by choosing organic, you can get the advantage of the nutritional benefits of milk without exposing your family to chemical contaminants.

Dairy is a favorite in people's diets, but one question in people's minds as they're choosing food for their family is "what is the difference between organic and conventional dairy?"

A new study out of Emory University tackled this question, and came to a clear answer: organic is an easy way to avoid contaminants in milk, providing consumers with an option free of commonly used antibiotics, pesticides and synthetic growth hormones.

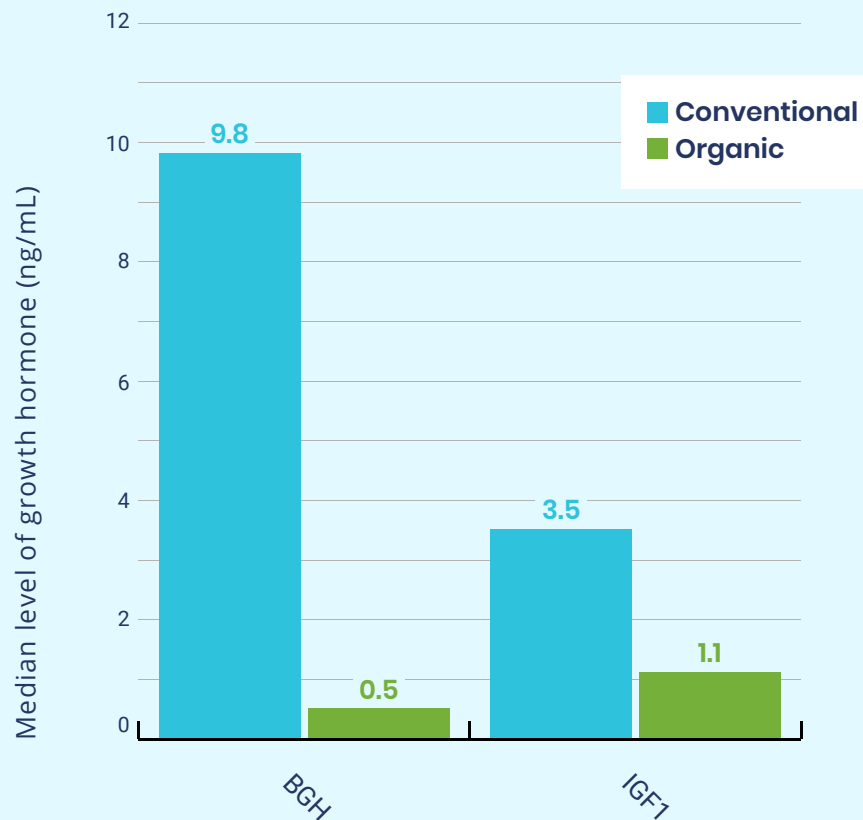
Researchers looked at samples of milk being sold at grocery stores around the country, comparing residues in conventional milk (35 samples across 18 brands) to organic milk (34 samples across 10 brands).

STUDY RESULTS

Growth hormone results:

While there is no federal limit set for cow-derived hormones in milk, this study found levels of the bovine growth hormone (bGH), the precursor to IGF-1, to be 20 times higher in conventional milk than organic.

GROWTH HORMONE LEVELS IN MILK



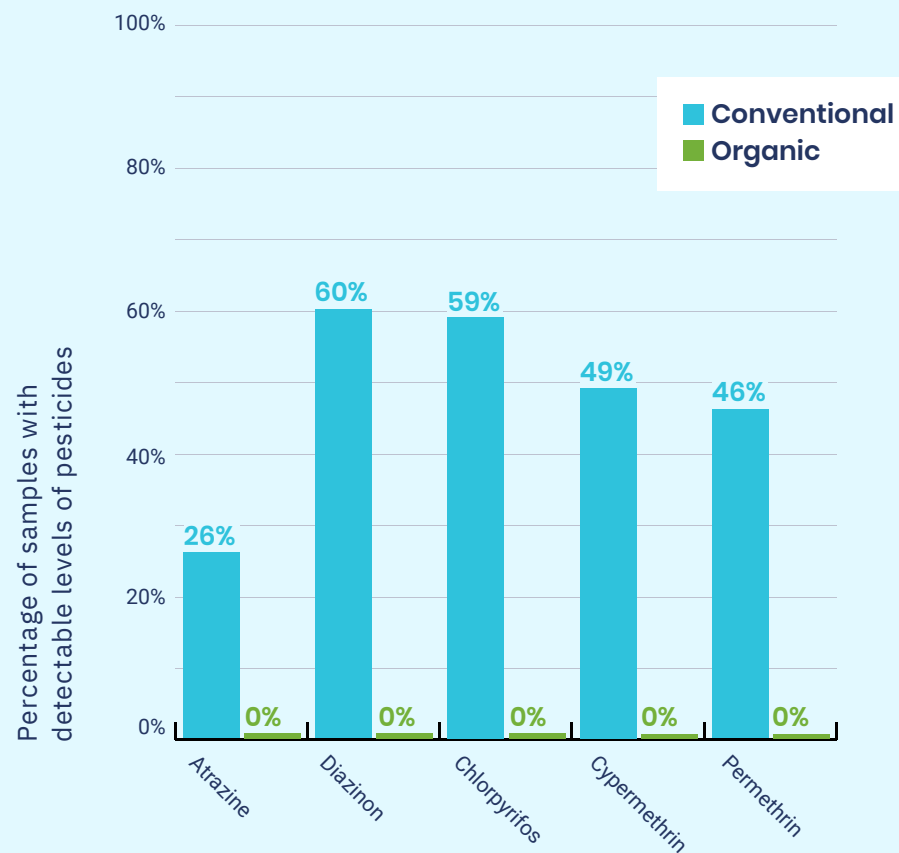
Growth hormone levels were significantly lower in organic as compared to conventional samples.

Pesticide results:

The researchers tested a wide variety of pesticides that are currently used in conventional production, and found no residues of these commonly used pesticides in organic milk samples. Conventional samples, on the other hand, showed residues of several pesticides, including atrazine, chlorpyrifos, cypermethrin, diazinon, hexachlorobenzene, and permethrin (26%-60% of the samples). Pesticide levels in the conventional samples were below the FDA limit for all of the pesticides.

Legacy pesticides are those that have been banned because of their known harmful consequences, yet remain environmentally persistent. The legacy pesticides tested in this study were hexachlorobenzene, ppDDT, and a breakdown component of DDT, the metabolite ppDDE. All were detected in nearly all of the milk samples, both conventional and organic. However, levels were significantly greater in conventional samples with approximately four times more hexachlorobenzene and 1.5 times more of ppDDE, the DDT metabolite.

PESTICIDES IN MILK



Of the currently used pesticides that had detectable levels in the study, all the detections occurred in conventional milk samples, with up to 60% of the samples testing positive. The study also tested several currently used pesticides that were not detectable in organic nor conventional milk samples, including dicofol, endosulfan-alpha, chlorthalonil, fonofos, cyfluthrin, and fenvalerate.

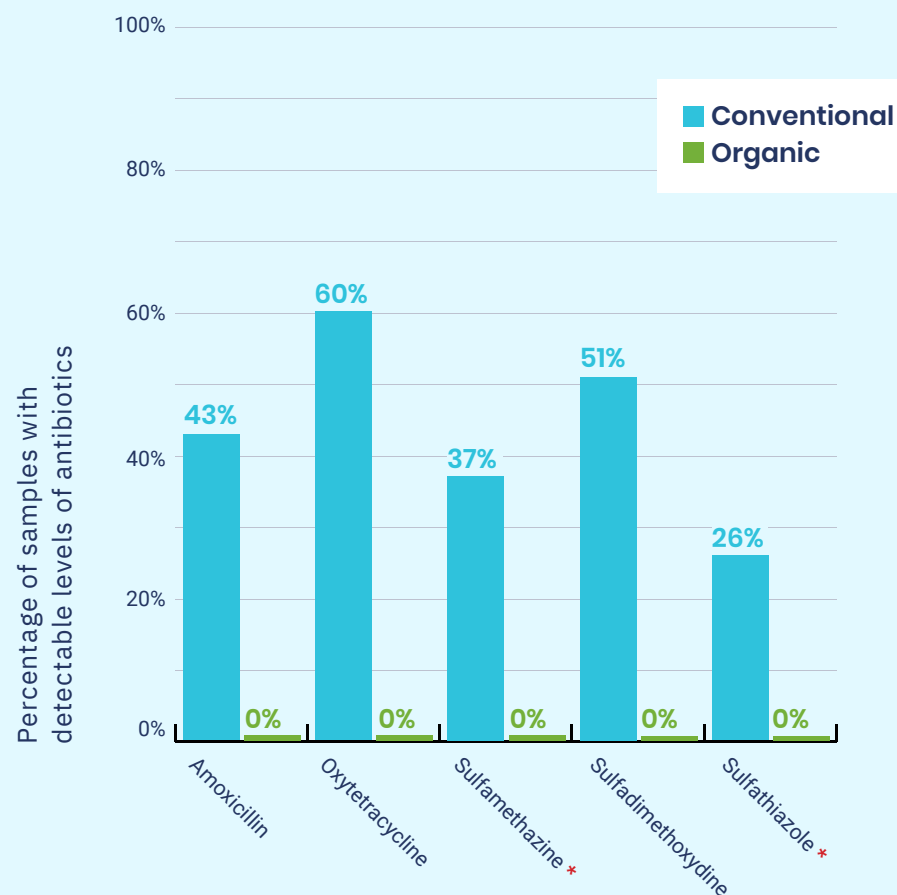
Antibiotics results:

Because the use of antibiotics increases resistance, the FDA has [set limits](#) on detectable levels of antibiotics in food. Testing is conducted at the production and processing stage for a limited number of antibiotics, and foods that exceed the acceptable limits are not to be sold to consumers. In this study, **antibiotics were not found in organic samples, but were detected in 60% of conventional milk samples.**

Specifically, amoxicillin, oxytetracycline, sulfamethazine, sulfadimethoxine, and sulfathiazole were all detected in conventional milk. While most instances of these antibiotic residues were below the safety limit set by the FDA, **one of the 35 conventional samples contained residue levels of amoxicillin that exceeded the FDA limit.**

Also, **37% of the conventional milk samples showed residue levels of an antibiotic called sulfamethazine, and 26% of conventional samples showed residues of sulfathiazole, which are both banned for use in lactating cows.**

ANTIBIOTICS IN MILK



No organic samples had any detectable levels of antibiotics, but up to 60% of conventional samples showed antibiotic residue levels. The study also tested several antibiotics that were not detectable in organic nor conventional milk samples, including carbenicillin, sulfabromethazine, sulfapyridine, monensin, lasalocid, and trimethoprim.

* Sulfamethazine and sulfathiazole are banned from use in dairy cows. Learn more about sulfonamides on page 9.

What are sulfa drugs?

Sulfonamides are antibiotics that have been [prohibited for use in lactating dairy cows](#) (with the exception of approved use of sulfadimethoxine, sulfabromomethazine, and sulfaethoxy pyridazine). Sulfonamides work systemically, which means that once taken, [they distribute throughout all body tissues](#). When cows are treated with sulfonamides, they show up in milk, and studies have suggested that exposure to them could lead to health problems.

Sulfonamides can [enter the environment](#) through dust from treated feed, manure and spills from manure lagoons, and water runoff from livestock and poultry operations—which impact aquatic organisms and cause occupational exposure to farmers and farmworkers.

WHAT HAPPENS WHEN BANNED ANTIBIOTICS ARE DETECTED IN MILK?

It is illegal to sell milk contaminated with trace levels of non-approved antibiotics. Milk that tests positive for banned antibiotics is to be discarded and an investigation is conducted to find the source. Regulatory action may be taken against the farmer with the positive antibiotic test.

HOW DO I AVOID ILLEGAL ANTIBIOTICS IN MILK?

The use of all antibiotics is prohibited in organic dairy production. To avoid potential contamination by antibiotics you can choose organic milk and dairy products.

WHY SHOULD I BE CONCERNED ABOUT SULFONAMIDES?

1. The biggest health concern for sulfonamide exposure is [acute hypersensitivity](#) (life-threatening allergic reaction). Allergic response rates to sulfonamides are similar to that of penicillin—about [2 percent](#) of the general population are severely allergic to sulfonamides.
2. Outside of allergic reactions, there are many adverse side effects connected to the sulfonamide class of antibiotics from minor ailments like [rashes, headaches, vertigo and anemia](#), to major issues like [birth defects](#) (if taken while pregnant), [hypothyroidism](#) and [thyroid tumors](#) (found in studies on rats).
3. Bacterial resistance is a major concern. [Sixty to 80 percent](#) of livestock and poultry receive antimicrobials (synthetic antibiotics), and over half of the antibiotics they receive are the same drugs prescribed to humans. This means that when bacterial resistance occurs in animal populations, the resistance also occurs in human populations, causing those shared antibiotics to be ineffective for all animals and humans.

Cross-resistance between sulfonamides is common, meaning that one type of sulfa-antibiotic can lead to bacterial resistance to another sulfa-antibiotic.
4. Sulfonamides for human treatment [have largely been replaced](#) by other drugs with less resistance and fewer adverse side effects. However, they are still extensively used in agricultural veterinary medicine and particularly for swine, poultry and cattle. Bacterial resistance emerges gradually, and is widespread in many animal populations.
5. Sulfonamides are [routinely detected in soil and water sources](#), and can be found in other terrestrial and aquatic organisms.

Conclusions from this study:

Organic dairy is an important choice for consumers who want to avoid exposure to chemical contaminants in milk. By testing milk straight off store shelves, researchers were able to uncover exactly what consumers are ingesting when they choose conventional or organic milk.

There needs to be more research conducted to expand the study and test more samples across the U.S. We also need to better understand why and how some of the conventional samples exceeded allowable limits, especially for banned antibiotics. In the meantime, in order to get the important nutrients from dairy, the safe choice is organic dairy.

For more information, visit:
[organic-center.org/milk](https://www.organic-center.org/milk)

Access the published research here.



What is “Organic” about Organic Dairy?



Have you ever wondered what organic dairy actually means? Organic farmers are required to adhere to some unique regulations that ensure organic dairy is produced sustainably, with the health of the cows and the health of the consumers in mind. While there are a number of important distinctions, the main differences are related to what the cows eat, where they spend their time, and how they are treated if/when they get sick. Organic standards of production keep cows happier and healthier, which translates into the quality of their milk, which is healthier for consumers.

Here are the specifics:



Living Conditions

Organic farmers must accommodate the health and natural behavior of organic livestock. They must be provided year-round access to the outdoors, shade, shelter, exercise areas, fresh air, clean water for drinking, and direct sunlight, suitable to the species, its stage of life, the climate, and the environment. Continuous total confinement of any animal indoors or in yards, feeding pads, or feedlots is prohibited.

Pasture Access

Organic ruminant livestock must be grazed throughout the entire grazing season for the geographical region, which must be at least 120 days per calendar year. Land for pasture must be managed according to the organic crop standards to ensure that sufficient quality and quantity of pasture are available for grazing.

Feeding and Grazing

During the grazing season, organic ruminant livestock must consume at least 30% of their diet from grazing on organic pasture (measured by dry matter intake). The remainder of the diet must be completely organic. Feeds containing growth hormones, antibiotics, GMOs, or slaughter by-products are prohibited.





ORGANIC DAIRY

Health Care

Organic farmers must manage livestock using preventive livestock health care practices, such as selecting species appropriate for site-specific conditions, providing healthy feed rations, safe and clean housing, and minimizing stress. Certain other health care medicines, including vaccines and some parasiticides, may be used if preventive health care practices are not sufficient. Antibiotics are prohibited.

Origin of organic dairy cows

Dairy sold or represented as organic must be from livestock that have been under continuous organic management for at least one year. This one-year transition period is allowed only when converting a conventional herd to organic. Once a distinct herd has been converted to organic production, all dairy animals must be under organic management from the last third of gestation.

Organic dairy means:

No antibiotics, growth hormones, GMOs, or pesticides.

Organic dairy farmers must take care of the health of their cows, using holistic, preventive health care practices.

The health and natural behavior of cows are prioritized.

All livestock feed must be 100% organic.

Cows are pasture-raised and grazed throughout the grazing season.





Nutrition of Organic Milk

Dairy is a culturally and nutritionally important part of the human diet. It provides a good source of protein, fat, calcium and vitamin D. But not all dairy is created equal, even when it only comes from cows. For nearly 15 years, studies have repeatedly shown that organic milk has a healthier nutritional profile. Organic milk contains more of the good omega-3 fatty acids, more antioxidants and a higher nutrient mineral content than conventional milk. Dairy cows under organic management eat more grass than those under conventional management, and that difference in their diet results in more nutrient-rich milk.

Organic milk has more omega-3 fatty acids

Omega-3 and Omega-6 are essential fatty acids that we need to be healthy, but our bodies can't produce them and we have to obtain them through our diets. While both are important, there's a healthy balance that must be achieved. Healthy omega-6: omega-3 ratios are low, around 2.3:1, but unhealthy diet trends have increased that ratio to between 10 and 15:1. Most Americans are getting too much omega-6 in their diets and too little omega-3. This asymmetry in fatty acid profiles has been linked with several common diseases such as [cardiovascular disease](#), [asthma](#), [osteoporosis](#), [breast cancer](#), [prostate cancer](#), and [inflammatory and autoimmune diseases](#). Low omega-6: omega-3 ratios, on the other hand, suppress these conditions.

[A large-scale review](#) of the nutritional profile of organic milk showed that organic milk contains 25 percent less omega-6 fatty acids and 62 percent more omega-3 fatty acids than conventional milk. It suggests that women who consume high levels of organic milk with reduced intake of omega-6 fatty acids in their diet, could decrease their omega-6 to omega-3 fatty acid profile by around 80 percent. The findings of this study aren't new, however. As early as [2006, published research](#) supported the healthier omega fatty acid profiles of organic milk.





Organic milk has more antioxidants and nutritional minerals

A study published in the [*British Journal of Nutrition*](#) showed that organic milk had several beneficial increases in nutritional minerals and antioxidants, such as higher concentrations of iron, vitamin E, selenium, and carotenoids. While several other studies have supported the benefits of consuming organic milk, this publication stood apart as the most comprehensive review conducted on this topic, drawing upon findings from 196 studies on milk from around the world.

Cows that eat more grass have more nutritious milk

Why is milk that comes from organic dairy cows more nutritious? Simply put, it's because they eat more grass. Milk from cows that eat more grass and legume-based forages (like alfalfa hay) [has been shown](#) to have more omega-3s and fewer omega-6s, among other improved nutritional qualities.

Organic milk is not only more nutritious, but it is also free from harmful substances such as artificial hormones and antibiotics because these are prohibited in organic dairy management.

Organic Doesn't Contribute to Antibiotic Resistance

Antibiotics are banned from use in organic dairy production, and with good reason. Using antibiotics can lead to antibiotic-resistant infections in animals that can be passed to humans. Antibiotic resistance has been described as one of the most pressing human health concerns today, and contributes to thousands of deaths each year. While the use of antibiotics in conventional agricultural practices has been implicated as an important contributor to this growing crisis, research also demonstrates that organic farming systems can also be part of the solution because they successfully produce nutritious food without the use of antibiotics.

The dangers of antibiotic resistant bacteria:

The over-use of antibiotics, especially for non-medical purposes, has led to the development of dangerous antibiotic-resistant bacteria. As antibiotics are used to treat diseases in any setting, the target bacteria can develop tolerance or resistance to those antibiotics over time, making them harder or impossible to kill. Prolonged and frequent use of antibiotics, even at low doses, has further accelerated this natural process, making many medically important antibiotics ineffective at combating infection and leading to what the World Health Organization has dubbed as “an emerging global crisis.”

How does antibiotic use in agriculture affect you?

Antibiotic resistance is important because many classes of antibiotics that are used in the human health system such as penicillin are also used in livestock production. If bacteria in livestock become resistant to the same antibiotics that we would use to fight them, we have little to no defense against many bacterial infections. And indeed, [numerous studies](#) have demonstrated that resistant bacteria originating in livestock can be transmitted to humans through the food supply chain. This means that humans can pick up bacteria such as E. coli or Salmonella, two common culprits in food poisoning, that will not respond to antibiotics when treated.

Another pathway contributing to antibiotic-resistant bacteria is exposure to low-levels of antibiotics in our bodies. One risk factor for antibiotic exposure is [consuming residues](#) that remain on or in food produced with antibiotics. This means that if the food we purchase has detectable levels of antibiotics, it could contribute to the buildup of resistance.

The use of antibiotics is [prohibited in organic production](#). Instead, organic dairy production relies heavily on holistic management of dairy cows, which raises the standard of living and promotes greater health in the livestock. Eating grass is healthier for cows than corn-based grain, and providing cows with adequate space to engage in natural behaviors all work together to promote a healthy herd.

While the use of antibiotics in conventional agricultural practices has been implicated as an important contributor to this growing crisis, [research](#) also demonstrates that **organic livestock production, which does not use antibiotics, is an important part of the solution.**

No Synthetic Growth Hormones in Organic Dairy

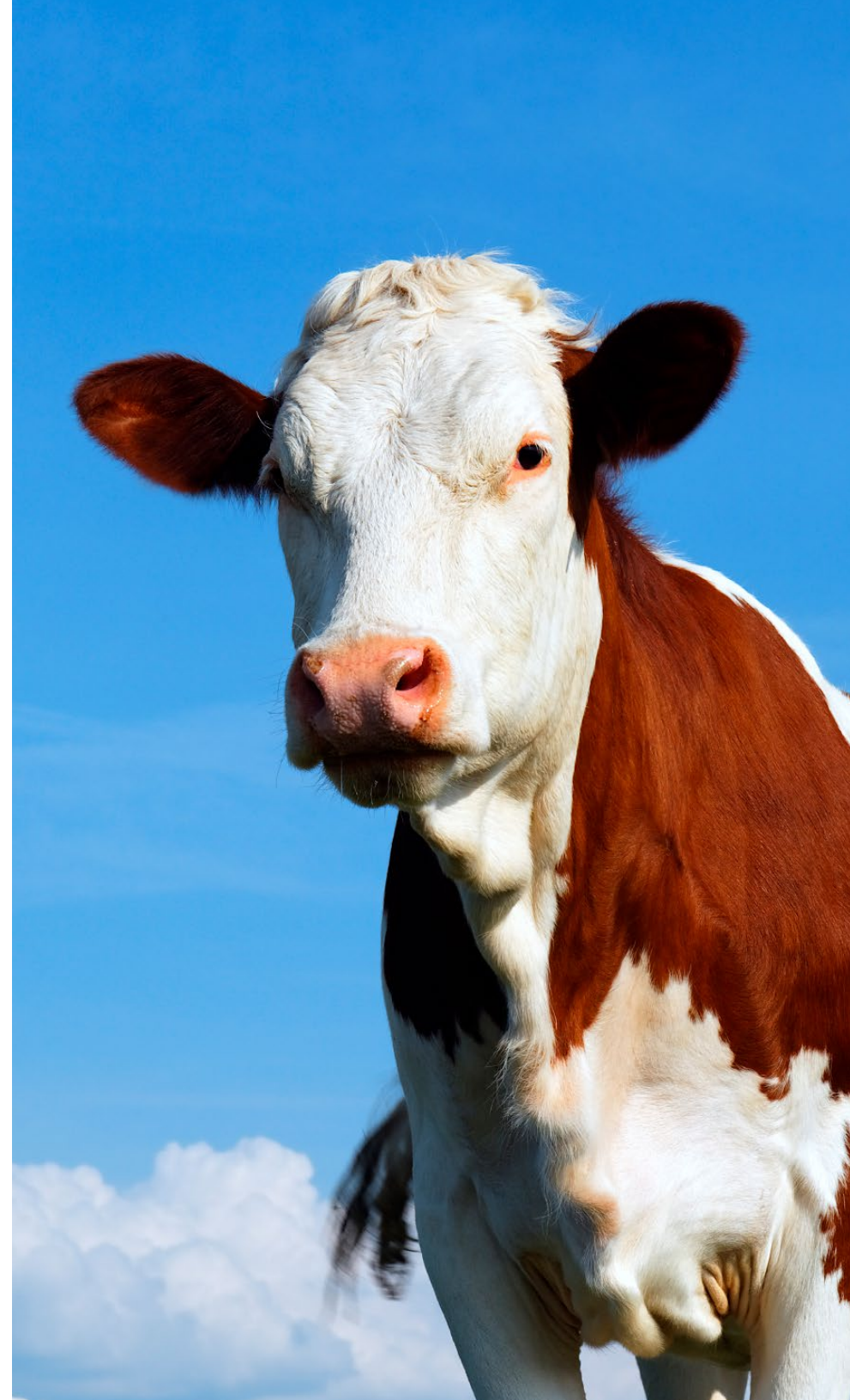
Synthetic growth hormones are also banned from use in organic farming. While growth hormones are naturally produced by animals, the use of synthetic growth hormones has gained popularity in conventional dairy operations because they promote the production of milk. Bovine growth hormone (bHG), also known as bovine somatotropin (bST), is naturally occurring in cows. It is produced by their bodies to increase milk production once a calf is born. The FDA approved the use of recombinant (synthetic) bovine growth hormone (rbgh) in dairy production to increase milk yields in 1993, but concern worldwide has raised in response to evidence showing endocrine disruption by hormones in dairy products. Changes in endocrine function can affect human growth, development, and reproduction.

What happens when humans ingest bovine growth hormones?

Hormones given to cows not only make their way into the milk that we drink, but cows who are treated with these hormones also tend to get sick more readily, causing an increase in antibiotic use, continuing the vicious cycle of drug use, resistance, and contamination.

While scientific evidence is mixed, the greatest concern centers around a protein called IGF-1 (Insulin-like Growth Factor 1), which is produced in the liver in response to the bovine growth hormone. IGF-1 in cow's milk is identical to human IGF-1, and limited toxicology studies lead to FDA approval. However, much research since approval has linked high levels of IGF-1 to breast cancer, colorectal, and prostate cancers. Studies have also linked higher levels of IGF-1 to issues in childhood growth and development, as well as immunity.

While bGH and IGF-1 occur naturally in cows and their milk at low concentrations, the administration of growth hormones in conventional dairy production has the potential to drastically increase the amount that humans consume in dairy products.



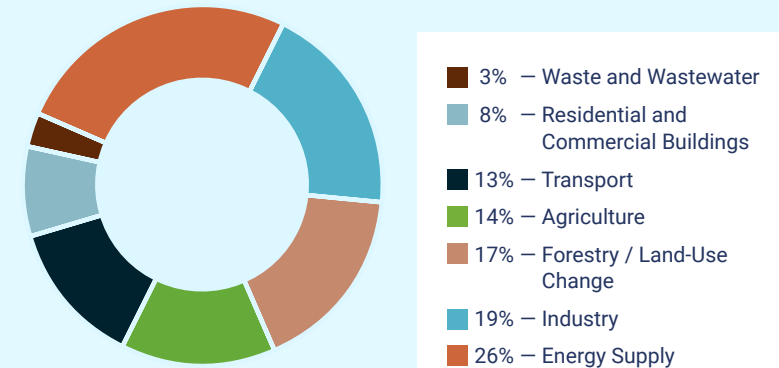
Organic dairy can help mitigate climate change

Organic dairy doesn't just have important differences when it comes to health, it can also help mitigate climate change by using practices that build soil health to sequester carbon, and requires cows spend more time in the pasture than conventional dairy, which reduces energy use and greenhouse gases in multiple ways.

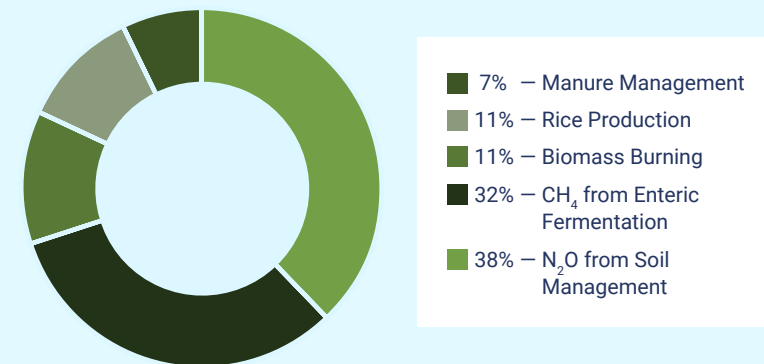
It's important to consider agriculture when thinking about climate change. Not only is our food security threatened by a changing climate, but agriculture is also one of the major contributors to climate change. According to the [International Panel on Climate Change](#), agriculture is responsible for 14% of total greenhouse gas (GHG) emissions, and livestock in particular contributes to this through manure management, enteric methane fermentation (e.g. cow belches), and nitrous oxide emissions from soil management for livestock feed (both pasture and grain production).

What cows eat, how their feed is produced, and where they are housed all influence the impact on GHG emissions and the potential for contributing to or mitigating climate change.

GREENHOUSE GAS EMISSIONS BY SECTOR



EMISSIONS IN THE AGRICULTURE SECTOR



This data from [IPPC](#) shows how much agriculture contributes to greenhouse gas emissions and how much opportunity there is for organic agriculture, especially organic dairy and livestock production, to reduce GHG emissions.

Grazing systems sequester carbon, whereas intensive, non-pasture based systems do not.

Organic cows are pasture-raised, and well managed pasture [can improve soil quality and store carbon](#) to help adapt to and mitigate climate change by incorporating manure into the soil. Additionally, when crops are rotated with livestock and utilize manure instead of synthetic nitrogen fertilizer (used in conventional crop production), the potential for soil carbon storage [dramatically increases](#). Intensive, conventional, non-pasture based dairy production does not sequester carbon because management is not soil based. Instead, manure is stored in lagoons, which are holding ponds containing a mix of manure and water that is used to rinse the manure from structures that house the cows.

Grazing-based dairy production has been shown to reduce both [methane](#) and [nitrous oxide](#) because less manure is stored in lagoons that release GHGs without storing carbon to offset that release. The amount of emissions from these manure lagoons is not trivial. For instance, two thirds of the GHG emissions from dairy in the state of California (the [largest producer of dairy cows, followed by](#) Wisconsin at #2) are attributed to [manure lagoons](#) alone.

Organic dairy means more time on pasture and less reliance on grain for feed.

Pasture is made up of perennial grasses that [requires few inputs](#) to grow year after year, especially under organic management which prohibits synthetic nitrogen fertilizers. By contrast, corn and soy are annual crops that require a lot of energy to produce and transport, emitting a lot of greenhouse gasses in the process. Conventional corn and soy use many [inputs that are energy intensive to manufacture and apply](#) such as synthetic nitrogen fertilizers, herbicides, and pesticides. These crops also require a lot of fuel for machinery used to plant, harvest, process and transport to dairy farms. This is especially true when feed grain is [imported from other countries](#).

Livestock systems that utilize more pasture for feed rather than grain can [use less energy and emit fewer greenhouse gases](#). Organic dairy requires a minimum of 120 days on pasture, whereas there are no minimum requirements for conventional. Additionally, organic grains used for feed in organic dairy production require less energy than conventional feed-grain because synthetic nitrogen is not allowed as fertilizer, and therefore not manufactured or applied. This reduces nitrogen emissions and fossil fuel consumption for application by tractors.