



What is Organic Food and Why Should I Care?

What is Organic Production?

Unlike marketing claims such as “natural,” “sustainable,” “green,” or “local,” the word “organic” is defined in Federal law and regulated through an extensive certification process, from field to fork.

“**Organic production**” is defined by the USDA National Organic Program

regulation as “a production system that is managed ... to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.”¹



In simplified terms, the National Organic Program regulations require:

For Crop Farms

- 3 years (36 months) with no application of prohibited materials (no synthetic fertilizers, pesticides or GMOs), prior to the first harvest of organic crops;
- buffer zones to prevent contamination from adjoining land uses;
- implementation of an Organic Farm Plan including proactive management systems to conserve and enhance biodiversity, build soil health, and environmentally sound fertility, weed, disease, and insect management practices;
- use natural inputs or approved synthetic substances on the National List only when proactive measures are insufficient;
- no use of genetically engineered organisms (GMOs), sewage sludge, or irradiation;
- use of organic seeds and planting stock, when

commercially available (must not use seeds treated with prohibited synthetic materials, such as fungicides) and use of organic seedlings for annual crops;

- the use of raw manure and compost must follow careful guidelines to safeguard human and environmental health;
- must maintain or improve the physical, chemical, and biological condition of the soil, minimize soil erosion, and implement soil building crop rotations;
- fertility management must not contaminate crops, soil, or water with plant nutrients, pathogens, heavy metals, or prohibited substances; and
- no field burning to dispose of crop residues (may only burn to suppress disease or stimulate seed germination – flame weeding is allowed).



For Livestock Operations

- 100% organic feed for all organic animals;
- organic management from last third of gestation for slaughter stock or 2nd day after hatching for poultry;
- one year of organic management for dairy cows prior to the production of organic milk;
- mandatory outdoor access for all species when weather is suitable;
- mandatory grazing on pasture for ruminants, at least 120 days per year;
- no antibiotics, growth hormones, GMOs, or feeding of animal by-products;
- must implement preventative health care

practices - vaccines are allowed;

- parasiticides prohibited for slaughter stock and tightly regulated for dairy and breeder stock;
- physical alterations are allowed, if done to promote animal's welfare and stress is minimized;
- operators must not withhold treatment in order to preserve an animal's organic status, but any animal treated with a prohibited substance must not be used or sold as organic; and
- manure must be managed to prevent contamination of crops, water, and soil, and to optimize the recycling of nutrients.





For Processing Operations

- may use mechanical or biological processing methods;
- no commingling or contamination of organic products during processing or storage;
- no use of GMOs, irradiation, artificial dyes, solvents, or preservatives;
- must use proactive sanitation and facility pest management practices to prevent pest infestations;
- must take steps to protect organic products and packaging from contamination;
- must not use packaging materials that contain fungicides, preservatives, or fumigants;
- must use approved label claims for "100% organic" (100% organic ingredients, including processing aids), "organic" (at least 95% organic ingredients), "made with organic ingredients" (at least 70% organic ingredients); and
- must identify the name of the certification agency on the product's information panel.

All operations producing, processing and/or selling organic products must keep records to verify compliance with the regulation and implement an audit trail to provide traceability. Organic products must comply with federal, state, local, and

international food safety requirements. Products must not be sold as "organic" if they contain residues of prohibited substances exceeding 5% of the EPA tolerance for that substance on that crop or food product.

W why Should I care?

Personal Health

Organic products are produced and processed without the use of synthetic and persistent pesticides, synthetic fertilizers, growth hormones, artificial ingredients and preservatives, and genetic engineering.

Research conducted by the USDA, California Dept of Health, and Consumers Union has consistently shown that organic products have very low, or no, pesticide residues.²

Researchers at the University of Washington found that a diet composed of predominantly organic food "provides a dramatic and immediate protective effect against exposures to organophosphorous (OP) pesticides." The researchers concluded that, "consuming food grown using organic production methods can virtually eliminate exposures to a dangerous class of insecticides known to disrupt neurological development in infants and children."³

Exposure to agricultural pesticides is associated with the risk of prostate cancer.⁴ Twice as many children of Iowa farmers developed childhood lymphoma as the control population.⁵



The President's 2010 Cancer Panel Report urges consumers to choose foods grown without pesticides or chemical fertilizers, antibiotics, and growth hormones to help decrease their risk of contracting cancer.

The report states, "Exposure to pesticides can be decreased by choosing, to the extent possible, food grown without pesticides or chemical fertilizers..."

Similarly, exposure to antibiotics, growth hormones, and toxic run-off from livestock feed lots can be minimized by eating free-range meat raised without these medications."⁶

Nutrition

Mothers consuming mostly organic milk and meat products were found to have about 50 percent higher levels of rumenic acid in their breast milk. This Conjugated Linoleic Acid (CLA) is responsible for most of the health benefits of CLAs in milk and meat. The greater reliance of organic beef and dairy farmers on pasture and forage grasses increases the levels of CLAs in milk and beef, and in turn in the breast milk of women eating organic animal products.⁷

In a ten-year comparison of the influence of crop management practices on the content of flavonoids in tomatoes, UC Davis researchers found that the ten-year mean levels of two important bioflavonoids, quercetin and kaempferol, were 79% and 97% higher in organic tomatoes. The levels of flavonoids increased over time in samples from the organic fields.⁸

USDA scientists have found that organic brands of catsup contain 57 percent higher levels of the health-promoting antioxidant lycopene.⁹

Researchers in Texas found that organic grapefruits had higher levels of ascorbic acid, certain health-promoting flavonoids, and sugars, and were lower in nitrates.¹⁰

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Water Quality

Drinking water is often contaminated with nitrates, which can cause blue baby syndrome and other negative health impacts. In studying water found in drainage tiles, University of Minnesota researchers found that alternative cropping systems, including organic, reduced the amount of water lost in drainage tile by 41 percent and reduced nitrate-nitrogen levels by 60 percent.¹¹

In long-term research at Washington State University, nitrogen (N) losses to groundwater and the atmosphere were reduced in organic orchards. Annual nitrate leaching was significantly lower in the organic plots. The organically farmed soils exhibited higher potential de-nitrification rates, greater de-nitrification efficiency, higher levels of organic matter, and greater microbial activity.¹²

No Genetic Engineering

The planting of genetically engineered crops is not allowed in organic production. Researchers at Indiana University have found that genetically engineered Bt corn harms aquatic insects and disrupts stream ecosystems. Caddisfly larva experienced high mortality and stunted growth when exposed to Bt corn pollen and crop residues.¹⁵

Scientists performing field research in North Dakota have discovered the first evidence of established populations of genetically modified plants in the wild. Researchers from the University of Arkansas, North Dakota State University,

California State University, Fresno and the U.S. Environmental Protection Agency found strong evidence that transgenic plants have established populations outside of agricultural fields in the United States.

Of the 406 plants collected, 347 (86 percent) tested positive for genetically engineered herbicide tolerance. There were also two instances of multiple transgenes in single individuals. Canola varieties with multiple transgenic traits have not been released commercially, so this finding suggests that feral populations are reproducing and have become established outside of cultivation.¹⁶

Soil Quality

Long-term USDA-ARS research has shown that organic farming practices significantly build soil organic matter content. The research showed that organic farming improved soil organic matter because the use of manure

and cover crops more than offset losses from tillage.¹³

In research conducted by Iowa State University, by the fourth year in an organic crop rotation, organic corn and soybean yields rose above county aver-

ages. The improving performance in the organic plots was attributed to soil quality improvements: more soil organic matter, enhanced microbial activity in more diverse communities of organisms, and reduced soil acidity.¹⁴

Biodiversity

Biodiversity is fundamental to organic farming. Diverse plant communities support beneficial insect communities that manage pest populations, eliminating the need

for highly toxic pesticides.

Organic farming increases biodiversity at every level of the food chain – all the way from bacteria to mammals.¹⁷ That is the conclusion of the largest review

ever done of studies from around the world on the impacts of organic agriculture on biodiversity. The study reviewed data from Europe, Canada, New Zealand, and the US.

Climate Change

According to a report issued by the International Trade Centre, a joint technical agency of the United Nations and the World

Trade Organization, “organic agriculture has much to offer in both mitigation of climate change through its emphasis on closed

nutrient cycles and is a particularly resilient and productive system for adaptation strategies.”¹⁸

Feeding the World

Long-term experiments in IA, MN, and WI demonstrate comparable corn and soybean

yields. Research summarizing 293 published comparisons found a

30% increase in world-wide yields using organic methods.¹⁹

¹www.ams.usda.gov/AMSV1.0/nop

²*Food Additives and Contaminants*, May 2002, B. P. Baker; C. M. Benbrook; E. Groth; K. Lutz Benbrook,

³*Environmental Health Perspectives*, doi:10.1289/ehp.10912 available via <http://dx.doi.org/> [Online 15 January 2008]

⁴*American Journal of Epidemiology, Agricultural Health Study*, May 2003.

⁵*Environmental Health Perspectives*, 112:631-635.

⁶“Reducing Environmental Cancer Risk: What We Can Do Now.” 2010. Dr. LaSalle Leffall, Jr., Howard University, and Dr. Margaret L. Kripke, M.D. Anderson Cancer Center in Houston.

⁷*British Journal of Nutrition*, June 2007.

⁸*Journal of the American Chemical Society*, 2007.

⁹*Journal of Agricultural and Food Chemistry*, December 29, 2004.

¹⁰*Journal of Agricultural and Food Chemistry*, (Vol. 55, 2007)

¹¹*Journal of Environmental Quality*, July-August 2007.

¹²*Proceedings of the National Academy of Sciences*, March 21, 2006.

¹³<http://www.ars.usda.gov/is/AR/archive/jul07/soil0707.htm>

¹⁴<http://extension.agron.iastate.edu/organicaag/rr.html>

¹⁵*Proceedings of the National Academies of Sciences*, (Vol. 104, No. 41)

¹⁶*Sustainable Food News*, August 6, 2010.

¹⁷*Biological Conservation*, (vol 122, p.113)

¹⁸*International Report on Organic Farming and Climate Change: “Organic Farming Can Help Mitigate Climate Change.”* International Trade Centre, the joint technical cooperation agency of the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization. 2008.

¹⁹*Renewable Ag and Food Systems*, Badgley C. et al, 22:86-108.

Additional organic websites of interest:

www.attra.org/organic.html
[www.extension.org/organic production](http://www.extension.org/organic_production)
www.eorganic.info
www.howtogoorganic.com
www.mda.state.mn.us/food/organic
www.mosesorganic.org
www.organic-center.org
www.organicecology.umn.edu

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