



Organic Foods: A Guide for Consumers

Camryn Cook, Graduate Student, Department of Food Science & Technology, Virginia Tech; Monica A. Ponder, Professor, Department of Food Science and Technology, Virginia Tech; Renee R. Boyer, Professor & Extension Specialist, Department of Food Science and Technology, Virginia Tech; Rory O. Maguire, Professor & Extension Specialist, School of Plant & Environmental Sciences, Virginia Tech; Steven L. Rideout, Professor & Extension Specialist, School of Plant & Environmental Sciences, Virginia Tech; and Laura K. Strawn, Associate Professor & Extension Specialist, Department of Food Science and Technology, Virginia Tech

What is “Organic”?

In recent years, the term “organic” has sparked much discussion among consumers. In fact, there is an overall misconception over the term with statements such as “organic is healthier” and “organic is safer” (Ingham, 2017).

However, the process behind “organic” is actually focused more on marketing and how the product is grown.



Figure 1: Photo of Organic Produce taken by C. Cook (Kroger, Blacksburg, VA).

Organic Agriculture: is defined by the United States Department of Agriculture (USDA) (Gold, 2007) as the application of a set of cultural, biological, and mechanical practices that support the cycling of on-farm resources, promote ecological balance, and conserve biodiversity. These include maintaining or enhancing soil and water quality; conserving wetlands, woodlands, and wildlife; and avoiding use of synthetic fertilizers, sewage, sludge, irradiation, and genetic engineering. Farmers

and processors must submit an application to the USDA and demonstrate that their products meet these statements consistently through periodical audits/reviews.

With this definition in mind, what does “organic” actually mean to a consumer? The USDA Organic Seal placed on a product simply means that the product was produced using the organic standards required for that product, frequently emphasizing factors such as soil quality, how animals are raised, and pest and weed control (McEvoy, 2021).

Organic foods are produced without using conventional pesticides or fertilizers made with synthetic ingredients or sewage sludge, bioengineering, or ionizing radiation.



Figure 2: USDA Organic Seal (USDA).

Understanding the Label

The National Organic Program (NOP) under the USDA Agricultural Marketing Service is responsible for enforcing the regulations of the USDA Organic label (McEvoy, 2021).

Important Terms

There are four categories for organic products:

100% Certified Organic: Products are made with 100% organic certified ingredients; must include name of the certifying representative.

Organic: Products and ingredients must be certified organic, except where specified on the National List of Allowed and Prohibited Substances. An example of an allowed example is baking soda. (<https://www.ams.usda.gov/rules-regulations/national-list-allowed-and-prohibited-substances>)

“Made with Organic ___”: At least 70% of multi-ingredient products must contain certified organic ingredients.

Specific Organic Ingredients: Multi-ingredient products with less than 70% organic ingredients. The organic label cannot be on the product but can list organic ingredients and their percentages.

Additionally, some labels may also include terms such as “grass-fed” or “free-range”. These labels are regulated by the USDA, but do not mean organic. These are voluntary labels applied by livestock producers to indicate the growing conditions for their livestock (USDA, 2011).



Figure 3: Photo of Organic Produce taken by Camryn Cook (Kroger, Blacksburg, VA).

Term	Definition
Antibiotics	Medicine given in specific amounts to reduce or kill microorganisms (specifically, bacteria).
Grass-Fed	Animals receive majority of their nutrients from grass throughout their life. Label is USDA regulated.
Free Range	Animals have access to outside spaces that allow them to graze and move freely. Label is USDA regulated.
Genetically Engineered (GE)	Foods that are GE have foreign genes inserted into their genetic codes to allow for different functions.
Growth Hormones	Hormones given to animals to boost their growth rate.
Irradiation	Exposing food to ionizing radiation that improves the safety and extends the shelf life.
Inorganic Fertilizer	Fertilizer that has been manufactured instead of combined by nature (e.g., Miracle-Gro).
Organic Fertilizer	Fertilizer that is made from plant or animal sources (e.g., manure).
Pesticides	A general term used to describe a chemical used in agriculture that destroys living pests such as insects, rodents, or fungi.
Preservatives	Safe chemicals added to a food to extend the shelf life.

Genetically Modified Organisms (GMOs)

While GMOs are prohibited in organic foods, they still raise concern among consumers (McEvoy, 2017).

Genetically modified organisms are plants, animals, or microorganism that have had their DNA changed using technology involving modification of DNA and may include insertions from other sources or deletions of specific genes. This process is also known as genetic engineering (FDA, 2020). Foods produced using these technologies must include a “bioengineered” label on them in the United States (FDA, 2022).

It is important to note that while GMOs refer to “genetic engineering,” they are not the same as selective breeding. Selective breeding refers to the process of choosing organisms with the most desirable traits and mating them with the intention of combining and breeding these traits through their offspring (Rangel, 2015). For example, using selective breeding in crops has allowed for better insect/disease resistance and drought tolerance (FDA, 2020). While selective breeding is not the same as genetic engineering, it laid the groundwork for the technology surround genetic engineering that is present today (Rangel, 2015).

In regard to vegetable and fruit crop production, only a few types possess GMO crop choices in the United States (FDA, 2022). For example, in 2020, 92% of overall corn planted was GMO corn (Dodson, 2022). GMOs are also used in ingredients like cereals, fiber crops, vegetable oils, and snacking chips (FDA, 2020). With this being said, most domestically produced produce is not GMO derived. More information can be found on the USDA List of Bioengineered Foods (<https://www.ams.usda.gov/rules-regulations/be/bioengineered-foods-list>).

Lastly, it is debated among consumers and scientists whether or not GMOs affect your health. However, over 20 years of research and monitoring has found that GMOs exhibit no ill effects towards human health (FDA, 2020). In fact, a 2016 report from the National Academies of Sciences, Engineering and Medicine looked at health and safety of foods with GMOs and found that genetically modified food does not

present a higher risk of toxicity than non-genetically modified food (Amasino, 2016).

For more information regarding GMOs, and bioengineered labeling, please see the following VCE fact sheet:

https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/AAEC/AAEC-283/AAEC-283.pdf

Natural vs. Organic

The difference between “natural” versus “organic” labeling can often times be misleading. Generally speaking, the label “natural” is only going to apply to ingredients and is not meant to address production methods (FDA, 2018).

What is “natural”: The USDA is the governing agency responsible for overseeing meat, poultry, egg products (not shell eggs), and catfish, while the Food and Drug Administration (FDA) regulates all other food products, including shell eggs. Therefore, each agency has their own definition for “natural products” (USDA, 2019, FDA, 2018).

USDA Definition: Meat, poultry, and egg products labeled as “natural” must be minimally processed and contain no artificial ingredients. The label does not include any standards related to farming practices and only applies to processing of meat and egg products. There are no standards or regulations for the labeling of natural food products if they do not contain meat or eggs (USDA).

FDA Definition: Nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in that food (FDA, 2018).

Since there is not a standard definition, food marketers can use the term as they believe fits best to their product which can be challenging

for consumers to decipher (Dunckel et. al, 2020).

A 2015 Consumer Report Survey determined that 60% or more consumers (out of 1,005 adult participants) thought a natural label meant that no pesticides, artificial materials, colors, or genetically modified organisms were used in the product (Rock, 2016). Even more interesting, over 80% of thought that these characteristics are what the label should mean (Rock, 2016).



Figure 4: USDA Organic Eggs identified by USDA Organic Seal (McEvoy, 2021).

Importantly, both the USDA and FDA definitions of “natural” do not mention GMOs or establish limits. They also do not mention the use of pesticides or better health benefits (Samson, 2021). Lastly, seeing the term “natural” does not mean that it is also organic. The USDA NOP is responsible for certifying and regulating foods labeled as organic (McEvoy, 2021).

Conclusions – Fact or Fiction?

In conclusion, this section aims to address some common misunderstandings about organic foods. Based on results from the 2019 Organic Survey, a 2017 Census of Agriculture special study, total sales of organic products reached \$9.9 billion (Matlock, 2021). Organic foods are increasing in the United States, and therefore, how they are viewed needs to be better understood.

“Organic foods are more expensive!”

FACT: Organic foods are more expensive because production costs are higher, post-harvest handling is challenging because there is mandatory segregation between organic versus normal produce (e.g., organic produce cannot come into contact with conventional produce), and most importantly, the organic food supply is limited in comparison to how popular it is (FAO). Additionally, the cost of receiving organic certification is very costly with fees ranging from approximately \$750 to \$1,250 the first year depending on the size of operation (CCOF).

“Organic foods are healthier!”

FICTION: Just because a product is organic, does not mean it is healthier. While products such as organic dairy has higher omega-3-fatty acids compared to normal dairy, differences are small regarding nutrition (Mie, 2017). However, consumption of organic foods may reduce exposure to synthetic pesticides (Smith-Spangler, et. al, 2012).

“Organic foods are free of pesticides!”

FICTION: Organic foods interestingly are not pesticide-free. The Organic Materials Review Institute (OMRI) verifies ingredients that can be used in organic production and provides assistance to support operations in the organic certification process (OMRI). Examples of ingredients used in pesticides that are approved for organic production are soaps, lime sulfur, and hydrogen peroxide (NPIC, 2020). For more information regarding pesticides that are approved for organic production please see the OMRI Product List at:

<https://www.omri.org/sites/default/files/opl/pdf/CropByCategory-NOP-EN.pdf>

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2023

FST-444NP