



science applied

How Do We Define Organic Food?

If you've ever spent time roaming through the aisles of a grocery store, you have undoubtedly seen food labeled "organic" (FIGURE SA5.1). You may even have purchased organic food, despite the fact that it is generally more expensive than conventionally grown food. Some people prefer organic food because they believe it is healthier and tastes better. Others buy it because they think organic food is safer to eat. Still others believe organic food is produced in a way that is healthier for the environment and safer for farmworkers. Are these beliefs accurate? What exactly does the organic food label mean?

How did the organic food movement begin?

The notion of organic food emerged in the 1940s, when farmers first started using synthetic pesticides in agriculture. Three decades later, interest in organic food increased as concerns about environmental contaminants became more widespread. Organic food enthusiasts wanted food that was free of chemicals, including pesticides. At the same time, the popularity of food grown locally on small farms was increasing. The push for organic produce in the 1970s was part of a counter-culture movement against the farming practices of large-scale commercial agriculture. As author Michael Pollan has documented, organic food was perceived as the food of people rebelling from the mainstream culture.

Today, organic food is much more common and appeals to people from all walks of life. Indeed, organic farming has increased rapidly during the past decade. According to the U.S. Department of Agriculture, the number of acres of organic farmland quadrupled between 1990 and 2005. The states that grow the most organic food are California, Wisconsin, North Dakota,

Minnesota, and Montana. In 2008, there were about 1.9 million ha (4.8 million acres) of organic cropland and pastureland in the United States. But although organic food has been the fastest-growing category of food in the nation, it still represents less than 1 percent of all cropland and pastureland and only about 3 percent of all food sales.

What does it mean to be organic?

An organic farmer is fundamentally concerned with the health of the soil. He or she will work hard to ensure that the organic matter content, base saturation, and cation exchange capacity of the soil will increase each year. Actions that will degrade the soil or promote erosion are carefully avoided.

The rise in popularity of organic products has brought increased pressure to define what exactly it means to be organic. Without government guidelines, anyone could claim to be selling organic food. In 1990, the U.S. Department of Agriculture (USDA) began to develop guidelines for organic food. Its goal was to set national organic certification standards that would assure consumers that the food was produced and processed with minimal use of chemicals. Food that met these standards could carry the USDA Organic seal (FIGURE SA5.2).

In 1995, the USDA determined that "organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles, and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain, and enhance ecological harmony." What does this statement mean in practice? First, it means that to be considered organic, food must be



FIGURE SA5.1 Organic food. Supermarkets today carry a wide variety of organic foods certified by the U.S. Department of Agriculture.

produced and processed with minimal use of pesticides. It also means that organic meat, eggs, and dairy products come from animals that have not been given antibiotics or growth hormones. Finally, it means that food labeled organic cannot have been fertilized with synthetic fertilizers or sewage sludge. Rather than relying on chemicals that come from outside the farm, organic farmers must use nonchemical methods of pest control and fertilization, as discussed in Chapter 7.

Pest control is perhaps one of the greatest challenges in organic farming. Agricultural pests include weeds that compete with the crops, insects that eat the crops, and fungal pathogens that can kill the crops. Organic farmers are required to try to control pests without synthetic pesticides. Such efforts can include mechanically destroying weeds and using plant-derived insecticides or the release of insect enemies to combat the pests. If these tactics fail, organic farmers are permitted to use a synthetic pesticide from a relatively small list of approved chemicals.

Having standards for organic food is effective only if those standards are enforced. One of the important functions of the USDA's National Organic Program is to conduct inspections of organic food producers and processors to ensure that organic food meets the national standards. Since 1990, the government has allowed inspections to be conducted by independent companies that are hired by producers and processors to inspect organic farms and factories to ensure that the organic standards are being met.

As part of this effort, the certifying companies were required to conduct spot checks. In 2010, the USDA announced that it had failed to enforce the spot check requirement and that, as a result, many of the largest independent certifiers had been conducting spot checks on organic food only if they suspected a problem. When problems were not suspected, producers could operate for years without any spot checks. In fact, some growers



FIGURE SA5.2 The USDA Organic seal. Food that meets USDA organic certification standards can carry the USDA Organic seal.

had been selling nonorganic food under the USDA Organic seal and obtaining a higher price for their products. In response, the federal government announced in 2010 that the funding and staff of the National Organic Program would nearly double to ensure that the certifying companies were conducting the required spot checks.

Does organic food mean family farms?

Most organic food production was originally conducted on small family farms. As we saw in Chapter 7, organic farming methods can require more labor, time, and money than conventional methods, so the price of organic food can be significantly higher. As farmers have learned, however, many consumers are willing to pay a premium for what they believe to be a premium product. This consumer behavior has attracted the attention of large factory farms owned by corporations, which have begun to conduct large-scale organic agriculture.

Although organic farms have a history of being small farms, there is no inherent reason why large farms cannot grow organic food (FIGURE SA5.3). An increasing number of corporations have decided to enter the business of organic food production. One of the most significant events to drive this movement occurred in 2006, when Wal-Mart, the largest grocery retailer in the United States, announced that it would begin selling a substantial number of organic foods in its stores at prices only slightly higher than those of nonorganic foods. Wal-Mart's expansion into this market has brought organic food to a much larger number of consumers. As a result, demand for organic food has increased, and more agribusinesses are producing it. Increased produc-

tion of organic food by larger, more efficient farms has driven down the cost of organic food.

As more factory farms entered the organic food business, there was increasing pressure to permit the use of some nonorganic and synthetic chemicals during the production stage, when the food from the field is turned into a form that can be sold in the grocery store. Proponents of the rule change, including agribusinesses, argued that many processed foods, such as frozen meals, could not be made in an organic version unless the rules about additives were changed. Opponents argued that if processed foods could not be made without additives, then processed foods should not be allowed to be certified as organic. In 2002, the USDA designated several nonorganic and synthetic additives as permissible in organic processed foods. Permitted nonorganic additives include citric acid, pectin, and cornstarch. Synthetic chemicals permitted in the processing of organic foods include alcohol (used for disinfecting machinery) and aspirin (used for medical treatment of animals).

What doesn't the organic label mean?

The USDA definition of "organic" does not match what many people think or hope "organic" should mean. For example, many people associate organic food with small family farms, but as we have seen, organic food can be grown on farms of all sizes. The USDA Organic seal therefore tells us nothing about the size of the farm that grew the food. Nor does the seal tell us anything about its safety, including whether it contains fewer dangerous food-related pathogens than nonorganic food. Nor does it indicate whether crop plants were genetically modified, or whether eggs, meat, and dairy products came



FIGURE SA5.3 Large-scale organic farming. Although organic farms traditionally have been small-scale family farms, some organic farms, such as this organic dairy in California, operate at much larger scales.

from animals that were treated humanely or allowed to roam freely outdoors, also known as “free range.” It tells us nothing about where the food was grown, or about labor conditions, such as compensation for the farmworkers who produced it. Furthermore, there are currently no standards for certifying nonagricultural products, such as seafood or cotton, as organic. Although you may see these products labeled “organic,” there is currently no agreed-upon definition for such products. Similarly, companies sometimes label their products “natural,” a word that seems to imply “organic,” but has no standard definition.

In response to public demand, farmers sometimes use food labels that go beyond the federal requirements for organic certification. They may include information about humane treatment of animals, the conditions and wages of the farmworkers, and whether genetically modified organisms were used. Such detailed labels have seen growing popularity.

Although the USDA organic certification has a somewhat narrow definition, it does offer a number of important benefits. There is no evidence that organic food is healthier for humans to eat, but the certification program at least provides a standardized set of requirements so that informed consumers understand what they are buying. Given the reduction in synthetic pesticide use, the program also allows consumers to support farming practices that are much better for soils and ecosystems and better for farmworkers, who face decreased risks from applying pesticides, than conventional farming practices.

References

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