

# Untangling the Food System

## Food System Components and Terms



Food System Component	Explanation
Soil Quality	High quality soil is rich in nutrients such as nitrogen and phosphorus, supports a range of microorganisms that support plant growth, and allows for sufficient drainage of water while maintaining moisture. Soil is the life support system for agriculture. Soil quality can be enhanced by organic and industrial fertilizers. Erosion decreases soil quality and certain farming and grazing practices can increase erosion.
Water	Both water quantity and water quality are important components of our food system. Water for agriculture comes directly from precipitation, as well as irrigation from ground water (aquifers) and surface water (streams, lakes and human-made reservoirs). Food plants and livestock need sufficient water to grow large and healthy. Water quality is often impacted by farm run-off. Fertilizers and pesticides often get washed into waterways by rain or flood and lead to poor water quality. Degraded water quality negatively impacts farmers and all people now and in the future.
Fertilizer	Fertilizers are applied to farm fields to enhance the soil characteristics. Most fertilizers contain nitrogen, phosphorus, and potassium. Fertilizers can be derived from compost, animal wastes, or other organic material. However, most conventional fertilizers are petroleum-based and composed of synthetic rather than natural ingredients. Fertilizers can run-off into near-by waterways and negatively impact water quality. Eutrophication, an excess of nutrients in streams and lakes, can negatively affect some organisms. Algae grow depleting the water of oxygen leading to fish die offs and subsequent lack of food for their predators, such as birds.
Pesticides	<p>Pesticides are substances that destroy pests. Pests can be insects, mice, unwanted plants (weeds), bacteria, viruses, fungi, or a variety of other animals that may be seen as a nuisance. Many conventional pesticides are petroleum-based and kill harmful as well as beneficial microorganisms. Eliminating beneficial microorganisms from the soil can impact the soil quality.</p> <p>The application of pesticides can negatively impact farmers' health. Pesticides can be carried along with soil run-off into water-ways, where they have a negative effect on water quality and organisms. Our food prices do not reflect the costs of farmers' health problems, pollution and environmental clean-up or the loss of biodiversity from pesticides. Actually, due to subsidies for pesticides, food prices are often lower for food produced using pesticides, even though it is an additional input.</p>
Food Prices	Food prices can be impacted by a variety of things. Recently, we have seen the increase in fuel prices lead to an increase in food prices. This is because in agriculture petroleum is used to fuel the tractors, as well as the trucks/planes/boats used for transporting the food. Increasing petroleum prices also increases the prices of pesticides and fertilizers, even further increasing food prices.



Fossil Fuels	Fossil fuels are non-renewable resources because they take millions of years to form. Coal, natural gas, and petroleum/oil are all forms of fossil fuels. Petroleum is used directly by farmers in the form of fuel, which is used to power tractors and other farm machines. Petroleum is also used in the manufacture of pesticides and fertilizers. Because petroleum is a non-renewable resource, its price may fluctuate greatly, which in turn may dramatically influence food prices.
Organic Food	Certified Organic food is food that is grown without the use of synthetic pesticides or fertilizers and no Genetically Modified Organisms (GMOs) are being used. Often the farmers will still use natural fertilizers, such as compost, to enhance their soil fertility.
Farmers	Farmers play a very important role in our food system. They grow and harvest the crops. Farmers are impacted by food prices, fossil fuel prices, as well as the movements such as the fair trade movement and organic food movement.
Fair Trade	Fair Trade is an organized social movement and market-based approach that aims to help farmers/producers in developing countries and promote sustainability. The movement advocates the payment of a higher price to producers as well as social and environmental standards. Fair trade aims to increase wages to farmers. If you purchase Fair Trade food products, you are guaranteeing that more of the food price goes to the farmer rather than to the “middle-man”.
Composting	Composting is a method of converting organic waste into nutrient rich fertilizer. The organic waste used to make compost can vary from food scraps (apple cores, banana peels, coffee grinds) to landscaping waste (grass clippings, leaves, branches) to animal waste (cow manure). Compost is high in nitrogen, phosphorus, and many other nutrients as well as rich in beneficial microorganisms. Composting on the farm site (instead of spending farm revenue to purchase synthetic fertilizers) can help the farmer enrich the soil without purchasing an expensive product.
Food Production	Food production, the ultimate output of agriculture, is influenced by a number of factors included in this activity. For example, the availability of water resources (either through precipitation or irrigation) in terms of both quantity and quality is a constant concern for farmers. Soil quality is also vital to the success of agricultural lands and the food that is produced is inherently influenced by soil nutrient content. The cost of inputs, like fertilizers and pesticides, are also important, especially in the face of extensive agricultural practices that exhaust the soil.
Human Population	By the middle of this century, scientists and demographers predict that the global population will approach 10 billion. With an increasing number of people to feed, the human population will continue to put pressure on farmers to produce more. This may result in an increase in the use of agricultural inputs, such as water, fertilizers, and pesticides. It may also result in a decline in soil quality.