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Organic farming

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ABOUT THE STUDY

Organic farming, agricultural system that uses ecologically based pest controls and biological fertilizers derived largely from animal and plant wastes and nitrogen-fixing cover crops. Modern organic farming was developed as a response to the environmental harm caused by the use of chemical pesticides and synthetic fertilizers in conventional agriculture, and it has numerous ecological benefits.

HISTORY

The concepts of organic agriculture were developed in the early 1900s by Sir Albert Howard, F.H. King, Rudolf Steiner, and others who believed that the use of animal manures (often made into compost), cover crops, crop rotation, and biologically based pest controls resulted in a better farming system. Howard, having worked in India as an agricultural researcher, gained much inspiration from the traditional and sustainable farming practices he encountered there and advocated for their adoption in the West. Such practices were further promoted by various advocates—such as J.I. Rodale and his son Robert, in the 1940s and onward, who published Organic Gardening and Farming magazine and a number of texts on organic farming. The demand for organic food was stimulated in the 1960s by the publication of Silent Spring, by Rachel Carson, which documented the extent of environmental damage caused by insecticides.

REGULATION

Organic agriculture is defined formally by governments. Farmers must be certified for their produce and products to be labeled "organic," and there are specific organic standards for crops, animals, and wild-crafted products and for the processing of agricultural products.

Organic standards in the European Union (EU) and the United States, for example, prohibit the use of synthetic pesticides, fertilizers, ionizing radiation, sewage sludge, and genetically engineered plants or products. In the EU, organic certification and inspection is carried out by approved organic control bodies according to EU standards. Organic farming has been defined by the National Organic Standards of the U.S. Department of Agriculture (USDA) since 2000, and there are many accredited organic certifiers across the country.

FERTILIZERS

Since synthetic fertilizers are not used, building and maintaining a rich, living soil through the addition of organic matter is a priority for organic farmers. Organic matter can be applied through the application of manure, compost, and animal by-products, such as feather meal or blood meal. Due to the potential for harboring human pathogens, the USDA National Organic Standards mandate that raw manure must be applied no later than 90 or 120 days before harvest, depending on whether the harvested part of the crop is in contact with the ground.

COMPOST

Soil is maintained by planting and then tilling in cover crops, which help protect the soil from erosion off-season and provide additional organic matter. The tilling in of nitrogen-fixing cover crops, such as clover or alfalfa, also adds nitrogen to the soil. Cover crops are commonly planted before or after the cash crop season or in conjunction with crop rotation and can also be planted between the rows of some crops, such as tree fruits.

PEST CONTROL

Organic pesticides are derived from naturally occurring sources. These include living organisms such as the bacteria *Bacillus thuringiensis*, which is used to control caterpillar pests, or plant derivatives such as pyrethrins.

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