

Organic Agriculture and Markets Worldwide

Pacific Organic Policy Toolkit
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Organic Agriculture and Markets

What is organic agriculture?

Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity, cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved. The principal guidelines for organic production are to use materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the farming system into an ecological whole. The balances in these agro-ecological systems resist imbalances such as pest infestations and disease. This constitutes a completely different paradigm from conventional agriculture, which rests on the concepts of reductionism and control; relying on synthetic nutrients for plant and animals, on synthetic pesticides to fight pests, and on synthetic drugs to optimize production of farm animals.

Enriching soil with abundant organic matter and microbial life is an important aspect of organic agriculture. Methods are used to minimize pollution from air, soil and water. Organic agriculture relies on fertilizers of organic origin such as green manure and compost, and places emphasis on techniques such as crop rotation and companion planting. Biological pest control through mixed cropping and the fostering of insect predators are encouraged. Generally, although there are exceptions, organic standards are designed to allow the use of naturally occurring substances while prohibiting or strictly limiting synthetic substances. Organic agriculture excludes genetically modified organisms, nanotechnologies, and highly restricts use of hormones and antibiotics in animal production. Organic animal production is also concerned for animal welfare, affording comfortable conditions and natural nutrition to animals.

Organic food handlers, processors and retailers adhere to standards that maintain the integrity of organic agricultural products. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.

More About Organic Practices

Key characteristics of an organic system are that it:

- relies primarily on local, renewable resources;
- makes efficient use of solar energy and the production potential of biological systems;
- maintains the fertility of the soil;
- maximises recirculation of plant nutrients and organic matter;

- does not use substances foreign to nature;
- maintains genetic diversity in the production system as well as the agricultural landscape;
- gives farm animals life conditions that correspond to their ecological role and allow them a natural behaviour.

Diversity and variation

Agriculture can be diversified in many different ways and much depends on the local climatic conditions and the available natural resources as well as social and cultural conditions. The size and condition of the farm and available labour, buildings, machinery and the market situation are other factors that influence the planning of the farm system. All the different components are a jigsaw puzzle that makes every farm unique and the farmer him/herself the best expert of the farm. Crop rotation ¹ (or crop succession), intercropping² and agro forestry ³ are examples of diversification of production. The diversity not only provides balanced nutrition for plants and animals and a natural crop protection, it also makes the total production less vulnerable to falling prices or reduced yields due to extreme weather conditions or pest occurrence and so provides the farmer a less risky economy.

Soil

Soil management is essential for all the activities and measures on the farm. A healthy soil is full of living organisms, and it is by feeding the soil organisms enough organic matter, providing them with air and water and protecting them from sun, hard rain and wind, that the possibilities for a balanced nutrient supply, resistance against pests and a high product quality can be achieved. Careful soil cultivation, coverage with living plants and supply of organic matter through green manure⁴, mulching and compost⁵ application are important measures for the micro-life and the build up of soil fertility. Organic farmers feed the soil to feed the plant.

Nutrients

The basic principle for the supply of plant nutrients is recirculation of organic matter and efficient use of available nutrients, e.g. through composting or mulching. In addition nitrogen-fixing ⁶plants (legumes) are used and plants with efficient root systems that contribute to the uptake and release of minerals. Farmyard manure is stored and distributed in such ways that it is efficiently re-circulated without leaching or polluting the surrounding environment. Addition of certain minerals and

¹ The action or system of planting a varied succession of crops over time.

² Growing a crop among crops of a different kind, often in spaces between crop rows.

³ Agriculture incorporating the cultivation and conservations of trees, some of which may produce food.

⁴ Plants and/or plant residues that are incorporated into the soil.

⁵ Decayed organic matter used as a soil conditioner.

⁶ The process by which atmospheric nitrogen is assembled into chemical compounds in plants.

lime may sometimes be needed. They are normally in the form of rock dust or mined minerals with no further processing than grinding.

Green manure

A crop that is grown for fertilization and improvement of the soil structure is called a green manure. Growing green manure is a common method all over the world because of the many positive effects such as improved soil structure and fertility; improved water holding capacity; erosion reduction; reduced weed competition; crop protection and fodder production. Various types of legumes and other nitrogen fixing plants are the most common crops for green manures. Others are grown for their deep root systems, which tap nutrient resources in the deeper soil and, after decomposing, make the nutrients available to crops. Some produce fibrous root systems that build up the soil structure. Many have flowers that attract pollinating insects. Green manures can be grown as a main crop (clover, beans and peas), intercropped with various crops (clover-grain, beans-corn) or as a cover crop⁷ after harvest of a main crop (rye, mustard).

Weeds

Weed management consists mainly of preventive measures (crop rotation, intercropping, green manure and the competitiveness of strong healthy plants). Knowledge about the biology of each weed is important to take necessary measures at the right point in the life cycle. Other technological measures are e.g. soil cultivation, delayed sowing, weed harrowing, hoeing, brushing, flame-weeding and hand-weeding.

Pest management

Pest management is best done through planning and preventive measures. For each crop strategies have to be built on knowledge about the crop and its pests. Polyculture⁸ and diversity benefit predators. Balanced fertilisation, crop rotation and intercropping, resistant varieties and green manure are important measures. Floating mulches (fibre web), mulching and biological control with plant extracts or living organisms are some direct management measures.

Animal husbandry

Animals should be kept in a way that grants them a life according to their natural needs and behavior. The well-being of the animal is the basis for good animal health and good economy. Organic husbandry standards usually require amongst others, the following:

- animals must have outdoors access
- baby mammals can suckle their mothers

⁷ A crop grown for protection of the soil rather than as a commercial product.

⁸ Simultaneous production of diverse crops and animals.

- animals are allowed to live in a herd and make up their own ranking order.
- number of animals kept on the farm be balanced with the amount of fodder the farm can produce
- animals should be fed the kind of feed they are naturally adapted to digest
- animals are able to express their natural behaviour, e.g. pigs are allowed rooting and nest building; hens scratching and sand-bathing.

Diversity of livestock is encouraged as it reduces parasites (as in crop diversity) and adds to the well-being of the animals.

Farm organization and collaboration

Organic agriculture works with nature, culture and science to enhance production as well as maintain ecosystem diversity and services. Mixed production farms i.e. incorporating both animal and crop production, are better positioned to support ecosystem diversity and higher self sufficiency in nutrient management through cycling and use of waste and by-products between production systems than specialized crop or animal production operations. Where it is not possible to have mix production systems in a single unit, collaboration between farms of different production systems can serve similar purposes.

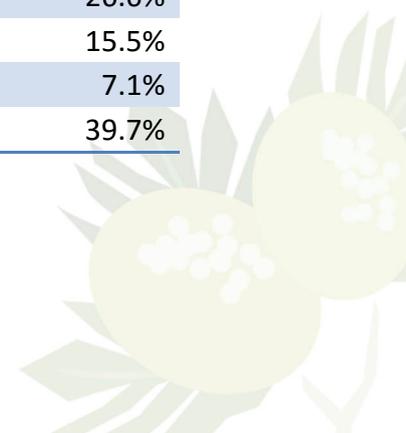
For information on the benefits of organic agriculture refer to the section on [Organic Potentials](#).

Where is organic agriculture practiced?

As of 2014, organic agriculture is formally practiced in 172 countries, and 43.7 million hectares of agricultural land are managed organically by approximately 2.3 million farmers. The region with the most organic agricultural land is Oceania (17.3 million hectares), but this is influenced by the vast areas designated for extensive grazing in Australia. Next is Europe, with 11.6 million hectares, then Latin America (6.8 million hectares, Asia (3.6 million hectares, North America (3.2 million hectares), and Africa (1.3 million hectares).

Table 1: World: Organic agricultural land (including in-conversion areas) and region's shares of the global organic agricultural land 2014

Region	Organic agricultural land [hectares]	Regions' share of the global organic agricultural land
Africa	1'263'105	2.9%
Asia	3'567'474	8.2%
Europe	11'625'001	26.6%
Latin America	6'785'796	15.5%
North America	3'082'419	7.1%
Oceania	17'342'416	39.7%



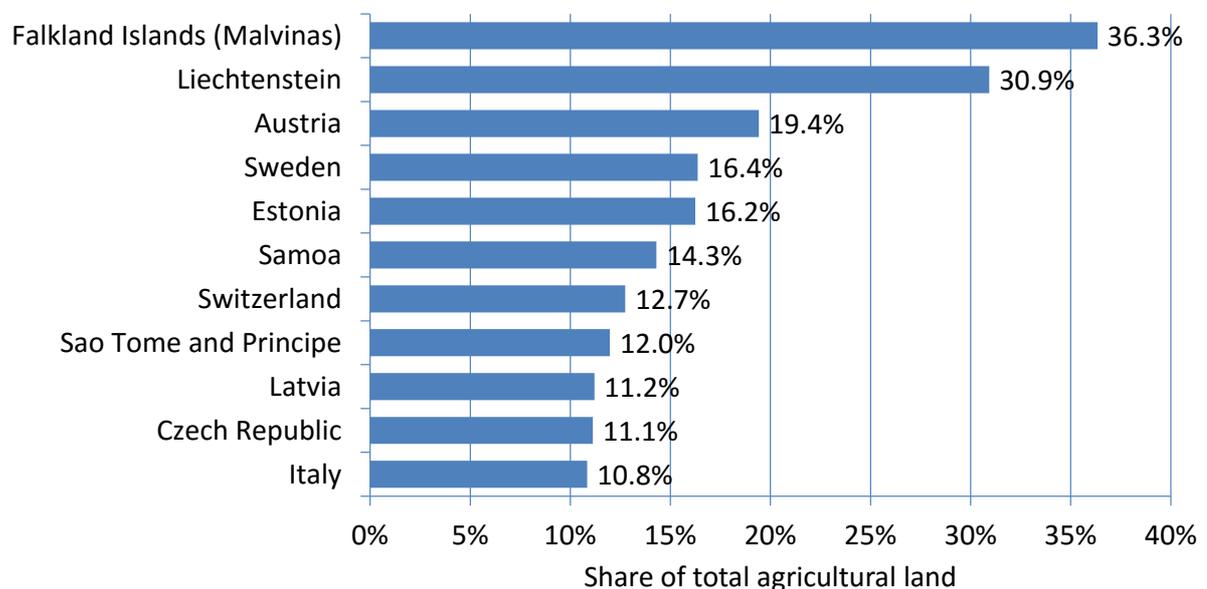
Total	43'662'446	100.0%
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Source: FiBL survey 2016. Note: Agricultural land includes in-conversion areas and excludes wild collection, aquaculture, forest, and non-agricultural grazing areas.

The share of the world's agricultural land that is organic is 0.99 percent. By region the organic share is highest in Oceania (4.1 %) followed by Europe, (2.4 %), and Latin America (1.1%). Many individual countries, however, feature much higher organic shares and eleven countries have reached more the 10%; most of these in Europe. It is interesting to note that many island states have high shares of organic agricultural land, including Samoa.

Countries with more than 10 percent of organic agricultural land 2014

Source: FiBL survey 2016



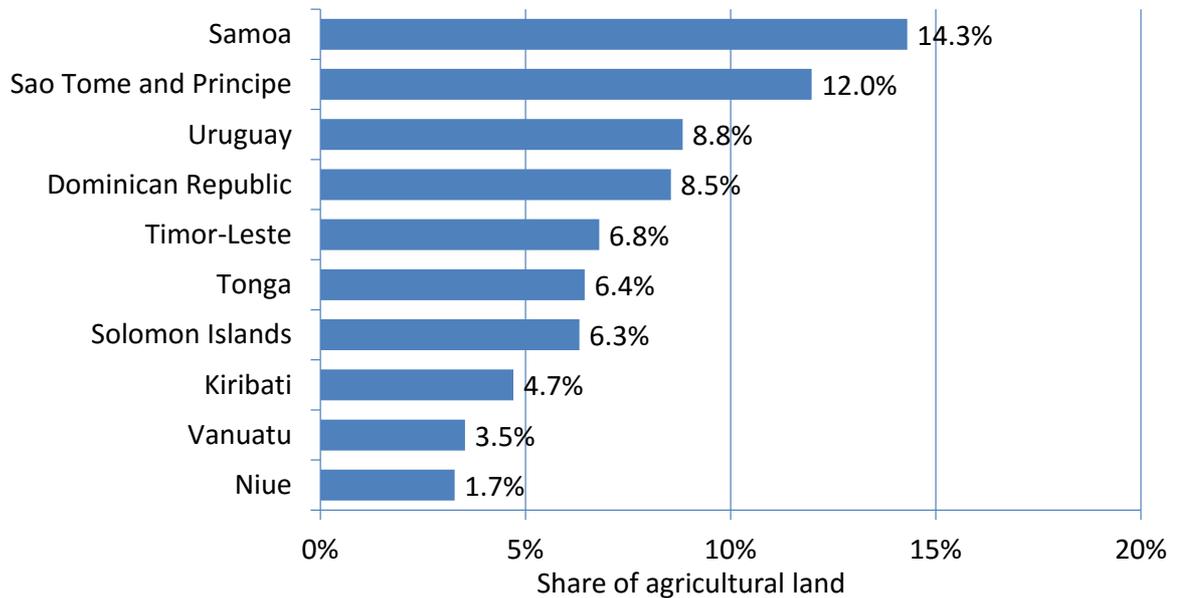
Three-quarters of the world's 2.3 million organic producers are in Asia, Africa, and Latin America. Among the countries with the highest rate of increase in producers in 2014 are China, Paraguay, Peru, the Philippines, and Thailand.

What is the organic agricultural landscape in developing countries?

87% of the world's organic producers are in developing countries (indicated by the OECD list of recipients for official development assistance), and these countries account for more than 25% of the world's organic agricultural land. More than half of the land is in Latin America, followed by Asia and Africa. Most of the countries with large areas of agricultural land are large e.g. Brazil, India. However, some of the countries with the largest percentage of organic land are small led by Samoa (14.3%).

The ten countries on the DAC list with the highest shares of organic agricultural land 2014

Source: FiBL survey 2016



What is the scope and size of the organic market?

The global sales of certified organic food and drink reached US\$ 80 billion 2014. In addition, subsistence agriculture and local sales from uncertified farms contribute to the global food supply. By region North America and Europe represent the largest markets (respectively US\$ 29.6 billion and US\$ 26.2 billion). Globally 89% of organic sales are represented by North America and Europe. However, markets are growing rapidly in Asia. Looking at shares of the organic market to the total market at country level, Denmark has the highest share (7.6%) The share in the United States is 5% and in Germany, 4.4%. Market growth has been generally vigorous worldwide. Annual growth of 10% or more is common in the United States, Canada, and some western European countries. This contrasts with growth of the total food sector in these countries well under 5%.

Links

[The Paradigm of Organic Agriculture](#)

[The World of Organic Agriculture: statistics and trends 2016](#)



ANNEX ONE

The history of organic agriculture

Traditional farming (of many particular kinds in different eras and places) was the original type of agriculture, and has been practiced for thousands of years. For example, forest gardening a fully organic food production system, which dates from prehistoric times, is thought to be the world's oldest and most resilient agro-ecosystem. After the industrial revolution had introduced chemical methods, most of which were not well developed and had serious side effects, an organic movement began in the 1940s as a reaction to agriculture's growing reliance on synthetic fertilizers and pesticides. Organic farming dates back to the first half of the 20th century at a time when there was a growing reliance on these new synthetic, inorganic methods.

The first 40 years of the 20th century saw simultaneous advances in biochemistry and engineering that rapidly and profoundly changed farming. The introduction of the gasoline-powered internal combustion engine ushered in the era of the tractor and made possible hundreds of mechanized farm implements. Research in plant breeding led to the commercialization of hybrid seed. And a new manufacturing process made nitrogen fertilizer — first synthesized in the mid-19th century — affordably abundant. These factors changed the labour equation. Fields grew bigger and cropping more specialized to make more efficient use of machinery. The reduced need for manual labour and animal labour that machinery, herbicides, and fertilizers made possible created an era in which the mechanization of agriculture evolved rapidly.

Organic agriculture began more or less simultaneously in Central Europe and India. The British botanist Sir Albert Howard is often referred to as the father of modern organic agriculture, because he was the first to apply modern scientific knowledge and methods to traditional agriculture. From 1905 to 1924, he and his wife Gabrielle, a plant physiologist, worked as agricultural advisers in Bengal, where they documented traditional Indian farming practices and came to regard them as superior to their conventional agriculture science. Their research and further development of these methods is recorded in his writings, notably, his 1940 book, *An Agricultural Testament*, which influenced many scientists and farmers of the day.

In Germany, Rudolf Steiner's development, biodynamic agriculture, was probably the first comprehensive system of what we now call organic farming. This began with a lecture series Steiner presented in 1924. Steiner emphasized the farmer's role in guiding and balancing the interaction of the animals, plants and soil. Healthy animals depended upon healthy plants (for their food), healthy plants upon healthy soil, and healthy soil upon healthy animals (for the manure). His system was based on his philosophy of anthroposophy (access to the spiritual world through inner

development) rather than based on science.

The term *organic farming* was coined by Lord Nourthbourne in his book *Look to the Land* (1940). From his conception of "the farm as organism," he described a holistic, ecologically balanced approach to farming.

In 1939 Lady Eve Balfour launched a farming experiment in England. Lady Balfour believed that humans' health and future depended on how the soil was used, and that non-intensive farming could produce more wholesome food. The experiment was run to generate data in support of these beliefs.^[12] Later she published *The Living Soil* based on the experiment's initial findings. Widely read, it led to the formation of a key international organic advocacy group, the Soil Association.

In Japan, Masanobu Fukuoka, a microbiologist working in soil science and plant pathology, began to doubt the modern agricultural trends. In 1937, he quit his job as a research scientist, returned to his family's farm in 1938, and devoted the next 60 years to developing a radical no-till organic method for growing grain and many other crops, now known as natural farming, nature farming, 'do-nothing' farming or Fukuoka farming. In a parallel timeframe Mokichi Okada established a similar nature-farming system, also called no-fertiliser farming.

Post-World War II

Technological advances during World War II accelerated post-war innovation in all aspects of agriculture, resulting in large advances in mechanization (including large-scale irrigation), fertilization, and pesticides. In particular, two chemicals that had been produced in quantity for warfare, were repurposed for peace-time agricultural uses. Ammonium nitrate used in munitions, became an abundantly cheap source of nitrogen. And a range of new pesticides appeared: DDT, which had been used to control disease-carrying insects around troops, became a general insecticide, launching the era of widespread pesticide use. At the same time, increasingly powerful and sophisticated farm machinery allowed a single farmer to work larger areas of land and fields grew bigger.

In 1944, an international campaign called the Green Revolution was launched in Mexico with private funding from the United States. It encouraged the development of hybrid plants, chemical controls, large-scale irrigation, and heavy mechanization in agriculture around the world. During the 1950s research concentrated on developing the new chemical approaches. One of the reasons for this, which informed and guided the ongoing Green Revolution, was the widespread belief that high global population growth which was demonstrably occurring, would soon create worldwide food shortages unless humankind could rescue itself through ever higher agricultural technology. At the same time, however, the adverse effects of "modern" farming kindled a small but growing organic movement. For example, in the US, J.I. Rodale began to popularize the term and methods of organic growing, particularly to consumers through promotion of organic gardening.

In 1962, Rachel Carson, a prominent American scientist and naturalist, published

Silent Spring, chronicling the effects of DDT and other pesticides on the environment. A bestseller in many countries and widely read around the world, *Silent Spring* is generally considered as a key factor in the US government's 1972 banning of DDT. The book and its author are often credited with launching the worldwide environmental movement.

In the 1970s, global movements concerned with pollution and the environment increased their focus on organic farming. Young idealists in North America, and to a lesser extent in Europe, became farmers and forged a back-to-the-land movement. Food cooperatives were founded, linking these farmers and consumers. The distinction between organic and conventional food became clearer, one goal of the organic movement was to encourage consumption of locally-grown food which was promoted through slogans like "Know Your Farmer, Know Your Food". In 1975, Fukuoka released his book, *The One Straw Revolution* with a strong impact in certain areas of the agricultural world. His approach to small-scale grain production emphasized a meticulous balance of the local farming ecosystem, and a minimum of human interference and labour. In the U.S. starting in the 1970's, J.I. Rodale and his Rodale Press (now Rodale, Inc.) led the way in getting Americans to think about the side effects of chemical methods, and the advantages of organic ones. The press's books offered how-to information and advice to Americans interested in trying organic gardening and farming. In 1972, the International Federation of Organic Agriculture Movements (IFOAM) was founded in Versailles, France and dedicated to the diffusion and exchange of information on the principles and practices of organic agriculture of all schools and across national and linguistic boundaries. In 1973, California Certified Organic Farmers established an early organic certification service in the United States. Soon thereafter similar organic farmer/consumer groups were established in North America to promote organic agriculture, establish standards, and certify farms.

In the 1980s, around the world, farming and consumer groups began seriously pressuring for government regulation of organic production. This led to legislation and certification standards being enacted through the 1990s and to date. In the United States, the Organic Foods Production Act of 1990 tasked the USDA with developing national organic regulations for organic products, which were finalized in 2000 after intense discourse with consumer and organic sector groups. The first EU organic legislation was established in 1990.

In Cuba the loss of Soviet economic support following the collapse of the Soviet Union in 1991 led to a focus on local agricultural production and the development of a unique state-supported urban organic agriculture program called organopónicos, which has become a whole-country laboratory and demonstration project for organic farming.

Since the 1990's hundreds of organic standards and certification schemes have been formulated worldwide in the private sector and many government regulations have been developed. Currently there are about 70 full organic regulations in countries including Brazil, Canada, China, Costa Rica, Israel, Japan, Korea, the Philippines,

Taiwan, and Thailand.

Since the early 1990s, the retail market for organic farming in developed economies has been growing by about 15- 20% annually due to increasing consumer demand. Concern for the quality and safety of food, and the potential for environmental damage from conventional agriculture, are apparently responsible for this trend.

The rise of organic farming was driven by small, independent producers and by consumers. In the early 21st century, explosive organic market growth has encouraged the participation of agribusiness interests. As the volume and variety of "organic" products increases, organic has attracted new consumers, further fuelling the growth of the sector. What started as an alternative movement now is established as an agribusiness sector.

