Organic farming superior to conventional, says 30-year study

In recently released findings of its rigorous 30-year side-by-side comparison of organic and conventional farming practices, the Rodale Institute concluded that organic methods are superior. The study looked at soil quality, productivity, energy, and economics as it surveyed the transition from conventional to organic.

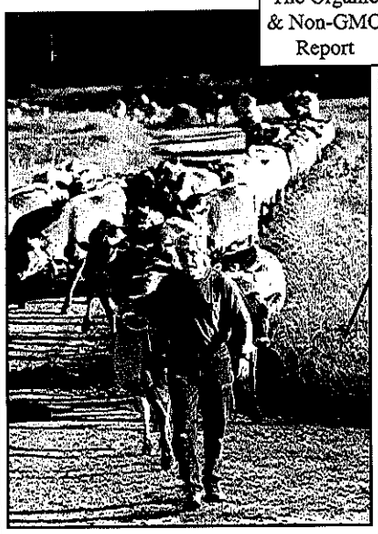
Results show that organic yields match or surpass conventional yields; organic yields outperform in drought years; organic systems build rather than deplete soil organic matter; they are more profitable than conventional; and organic farming uses 45% less energy. In addition, conventional systems produce 40% more greenhouse gases.

"The Farming Systems Trial shows that organic farming is the healthiest and safest way to feed the world, provide much-needed jobs, reduce our greenhouse gas emissions and protect precious natural resources," said Mark Smallwood, executive director of Rodale Institute.

"The Farming Systems Trial clearly documents in a replicated, scientific fashion, that many of the current myths are not true. Organic agriculture does not result in the grower losing money, and does not result in lower yields or more expensive management practices," says Dr. Elaine Ingham, chief scientist at Rodale.

The trial will continue, with a new focus on nutrition and human health. "We have shown that organic can feed the world," Smallwood said. "Now it is time to take on the matter of feeding the world well." ■

Courtesy of The Organic & Non-GMO Report



New reports say organic farming benefits farmers, consumers, the economy, and environment

Report: Sustainable food production for 9 billion people possible

Agriculture experts worldwide wonder if the world can feed the more than 9 billion people expected to live on the planet in 2050 without destroying the Earth's life support system.

In a new report published in the October issue of *Nature*, a team of researchers from the US, Canada, Sweden and Germany conclude we can—if we successfully pursue sustainable food production on five key fronts: halting farmland expansion in the tropics, closing yield gaps on underperforming lands, using agricultural inputs more strategically, shifting diets and reducing food waste.

"For the first time, we have shown it is possible to both feed a hungry world and protect a threatened planet," said lead author Jonathan Foley, head of the University of Minnesota's Institute on the Environment. "It will take serious work. But we can do it."

Scientists from the University of Minnesota, University of Wisconsin, McGill University, UC Santa Barbara, Arizona State University, Stockholm Resilience Centre at Stockholm University, Stockholm Environment Institute and the University of Bonn have been working together for two years to find an answer to what could be the most compelling question facing humanity today.

The researchers propose a multi-pronged approach combining the best of conventional and organic agriculture, industrial farming, local production, biotechnology, and more to create a sustainably intensified global food system. ■

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Organic Cuba 2013

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URBAN FARMER ACTAF

With chronic disease around the world at an all time high (polluted air, rivers, ponds,Long Island Sound, etc.) commercial foods from farms are low in nutrients and high in pesticide residue. Out of balance soil fertility is compromised due to the use of drugs and poisons.

We need our government to take action in partnering with nature to develop 100% Organic Farms and 100% Ecological Landscaping. We must use the best organic products, free of drug and poisons, that are safe for our soil and our Food Web (The Engine of Nature). We must defend the integrity of nature for the health of future generations.

Before

After

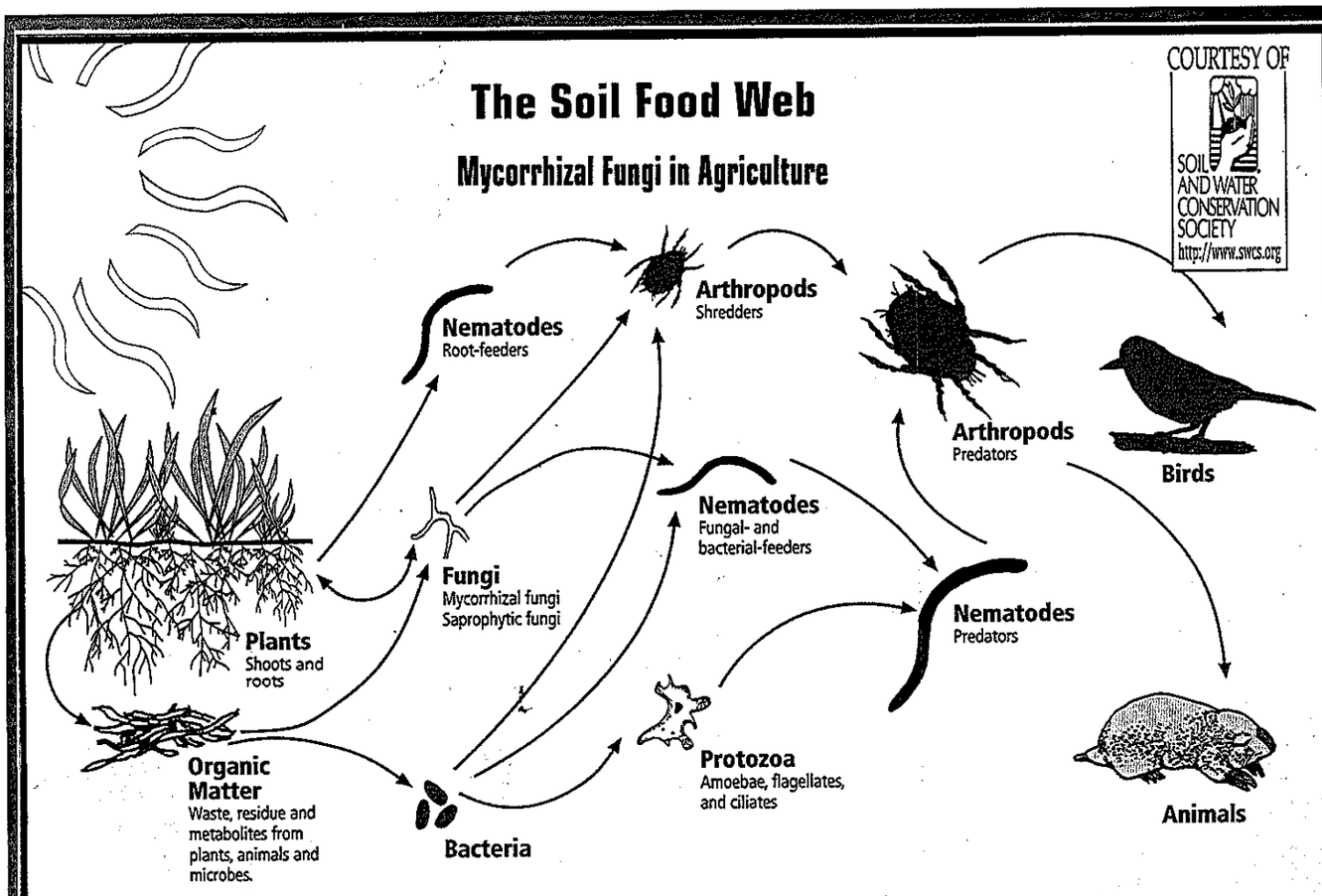
Before

After

The Soil Food Web

Mycorrhizal Fungi in Agriculture

COURTESY OF
SOIL AND WATER CONSERVATION SOCIETY
http://www.swcs.org



First trophic level:	Second trophic level:	Third trophic level:	Fourth trophic level:	Fifth and higher trophic levels:
Photosynthesizers	Decomposers Mutualists Pathogens, Parasites Root-feeders	Shredders Predators Grazers	Higher level predators	Higher level predators

THE SOIL FOOD WEB WARRIORS

Figure 2: Bacteria dot the surface of strands of fungal hyphae.

How Bacteria Enhance Soil Quality

- *Feed other members of the food web*
- *Decompose organic matter*
- *Help keep nutrients in the rooting zone and out of surface and groundwater*
- *Enhance soil structure, improving the flow of water and reducing erosion*
- *Compete with disease-causing organisms*
- *Filter and degrade pollutants as water flows through soil*

Figure 2: Fungus beginning to decompose leaf veins in grass clippings.

How Fungi Enhance Soil Quality

- *Decompose complex carbon compounds*
- *Improve accumulation of organic matter*
- *Retain nutrients in fungal biomass, reducing leaching of nutrients out of the root zone*
- *Physically bind soil particles into aggregates*
- *Are an important food source for other organisms in the food web*
- *Improve plant growth when mycorrhizal fungi become associated with the roots of some plants*
- *Compete with plant pathogens*
- *Decompose certain types of pollutants*

Figure 2: Bacteria ingested by an amoeba.

How Protozoa Enhance Soil Quality

- *Release nutrients stored in microbial biomass for plant use*
- *Increase decomposition rates and soil aggregation by stimulating bacterial activity*
- *Prevent some pathogens from establishing on plants*
- *Provide prey for larger soil organisms, such as nematodes*

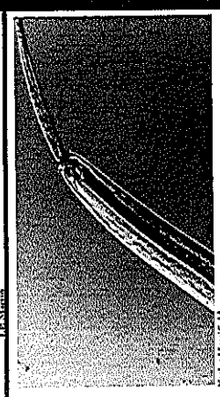


Figure 2: A predatory nematode consumes a smaller nematode

How Nematodes Enhance Soil Quality

- *Regulate the populations of other soil organisms*
- *Mineralize nutrients into plant-available forms*
- *Provide a food source for other soil organisms that influence soil structure*
- *Consume disease-causing organisms*

Figure 2: Mites shred and skeletonize leaves on the forest floor.

How Arthropods Enhance Soil Quality

- *Improve soil structure through burrowing and the creation of fecal pellets.*
- *Control disease-causing organisms.*
- *Stimulate microbial activity.*
- *Enhance decomposition through shredding of large plant litter and mixing of the soil.*
- *Regulate healthy soil food web populations.*

Earthworms generate tons of casts per acre each year, dramatically altering soil structure.

How Earthworms Enhance Soil Quality

- *Shred and increase the surface area of organic matter, thus stimulating microbial decomposition and nutrient release*
- *Improve soil stability, porosity, and moisture-holding capacity by burrowing and aggregating soil*
- *Turn soil over, prevent disease, and enhance decomposition by bringing deeper soil to the surface and burying organic matter*
- *Improve water infiltration by forming deep channels and improving soil aggregation*
- *Improve root growth by creating channels lined with nutrients*