



Produce More, Conserve More

Agriculture Sustainability Glossary

The discussion already underway about our planet's urgent sustainability challenges ahead in agriculture has generated its own vocabulary. What follows is a glossary of terms designed to help better understand the language of sustainability.

A

Abatement: Reducing the degree of, or eliminating, pollution.

Adaptation: Changes in an organism's structure or habits that help it adjust to its surroundings.

B

Biodiesel: An alternative to standard diesel fuel, this clean-burning, renewable fuel is created by combining methanol or ethanol (the base) with vegetable oil, such as canola or soybean oil, or animal fat. It can be used in any diesel engine, either by itself or blended with petroleum diesel.

Biodiversity: The biological diversity of life on Earth. As human influence spreads, concern rises over the reduction of the total number of species and its effect on economics, medicine, and the ability of ecosystems to remain viable.

Biofertilizers: Microorganisms that increase the amount of nutrients available to plants.

Biofuel: Any fuel derived from an organic material that is not fossilized like coal or petroleum. Common sources of biofuel grown for the U.S. and European markets are corn, soybeans, flaxseed and rapeseed. Biofuel can appear in solid, liquid, or gas form.

Biomass: Organic, non-fossil material available on a renewable basis. Biomass includes all biological organisms, dead or alive, and their metabolic by-products that haven't been transformed by geological processes into substances such as coal or petroleum.

Biopesticides: Microorganisms that increase the amount of nutrients available to plants.

Biosphere: That part of a planet's outer shell -- including air, land, and water -- within which life occurs, and which biotic processes alter or transform.

Biotechnology in plants: Plant biotechnology is an extension of traditional plant breeding with an important difference – plant biotechnology allows for the transfer of a greater variety of genetic information in a more precise, controlled manner. It allows for the transfer of one, or a few, genes that can introduce traits such as better insect and weed control. Future applications include plants that utilize water more efficiently.

C

Carbon footprint: The total amount of greenhouse gases emitted directly and indirectly to support human activities, usually expressed in equivalent tons of either carbon or carbon dioxide.

Carbon (or climate) neutral: When activities that reduce or capture carbon are paired successfully with those that produce it, they are said to be carbon neutral or climate neutral.

Carbon trading: Any trading system designed to offset carbon emissions from one activity (such as burning fossil fuels in manufacturing, driving, or flying) with another (such as installing more efficient technologies, planting carbon-reducing plants, or establishing contracts with others not to partake in carbon-releasing activities). The Chicago Climate Exchange (CCX) is the first and biggest carbon-trading market in existence and is modeled on a stock market.

Cerrados: The ecologically rich area in central Brazil (and some of northeastern Paraguay and eastern Bolivia) is a vast savanna – the richest savanna in the world, biologically. It boasts more than 10,400 plant species and 1,300 fauna species, many endemic to the region. Major efforts are underway to preserve this biologically rich savanna, since only 3 percent of the domain is protected.

Climate change: Any long-term significant change in the “average weather” that a given region experiences. Average weather may include average temperature, precipitation and wind patterns. It involves changes in the variability or average state of the atmosphere over durations ranging from decades to millions of years. These changes can be caused by dynamic processes on Earth, external forces including variations in sunlight intensity, and more recently by human activities. (**See also Global warming**)

CSR (Corporate Social Responsibility): A business outlook that acknowledges responsibilities to stakeholders -- including suppliers, customers, and employees as well as local and international communities in which it operates -- and the natural environment. There are few accepted standards and practices so far.

D

Diversity: In nature, a source of ecosystem strength since failures are unlikely to eliminate all species. Therefore, the ecosystem will recover in some form and continue.

E

Ecological economics: An interdisciplinary framework that seeks to merge the two historically separate fields of economics and ecology. It assumes that an inherent link exists between the health of the Earth's ecosystem and the economic system created by human beings; the economy is a subsystem of the earth's ecological system; and by understanding how each system flows into and out of the other, each can thrive and prosper.

Ecological footprint: A term to describe the total ecological impact (the amount of land, food, water, and other resources needed) to sustain a person or organization. This is usually measured in acres or hectares of productive land. It is used to determine relative consumption

Ecology: A science that studies the Earth and its systems, including the interrelationships of all living things and all elements of their environment. The science was further developed from the work of Ernest Haeckel when investigating "the study of living things within their environmental context."

Ecosystem: A dynamic and interdependent living community of people, parts or mechanisms that interact with one another. The term was coined by Arthur Tansley, a British Ecologist, who said that "ecosystems have the capacity to respond to change without altering the basic characteristics of the system."

G

Genetically Modified Microorganisms: Microorganisms modified using gene technology.

Genetically Modified Organisms: GMOs are plants and animals that have had their genetic makeup altered to exhibit traits that are not naturally theirs. In general, genes are taken (copied) from one organism that shows a desired trait and transferred into the genetic code of another organism.

Global warming: An aspect of climate change, it is the gradual, average increase of temperature of the Earth's atmosphere and oceans. Global warming is accelerated by the greenhouse gases expelled into the atmosphere from man-made sources. **(See also climate change.)**

Green: A common metaphor referring to environmental association based on the shared secondary color of many plants. It is often used to associate products, organizations, political parties, or policies with environmental sensitivity.

Green tech: Referring to a collection of new technologies and approaches that maximize human, environmental, and economic benefits.

Greenhouse gas: Gases produced from human activities that trap solar radiation and thus contribute to climate change and the destruction of the ozone layer. These include carbon dioxide (CO₂), methane (CH₄) and Hydrofluorocarbons (HFCs).

H

Hypoxic zone: Hypoxia means "low oxygen." In estuaries, lakes, and coastal waters, low oxygen usually means a concentration of less than 2 parts per million. For example, the Gulf of Mexico hypoxic zone is an area along the Louisiana-Texas coast where water near the sea floor has hypoxic conditions, believed to be caused by excess nutrients delivered by the Mississippi River.

M

Marker genes: Genes coding for particular traits that allow a microorganism to be tracked.

Millennium Ecosystem Assessment: A United Nations-funded study of the state of ecosystem services around the world. The four-year-long study, completed in March 2005, is the most extensive and accurate study of its kind and it reports on habitat status, fishing, coral reefs, forests, water use, atmospheric carbon and temperature, weather, land use, and population.

O

Organic: There are many meanings for the term “organic,” but in the food and agricultural sense, the term generally describes the absence of chemical pesticides, hormones, synthetic fertilizers and certain other materials in the cultivation of end products.

Overshoot: The amount that any value exceeds its intended measure. In sustainability terms, overshoot is often the amount a variable (such as a measure of environmental impact) exceeds what is thought to be acceptable. Overshoots can be positive but are usually used to convey negative impacts of activity.

P

Phytostimulators: Microorganisms that stimulate plant growth through the production of compounds such as hormones.

R

Renewable: Any material or energy that can be replenished in full without loss or degradation in quality.

S

Stewardship: Responsible caretaking; based on the premise that we do not own resources but only manage them, and are responsible to future generations for their condition. Making decisions regarding the care of our environment with the goal of passing healthy ecosystems on to future generations.

Sustainability: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable agriculture: Farming methods that allow the production of crops or livestock without damage to the farm as an ecosystem, including effects on soil, water supplies, biodiversity or other surrounding natural resources. The concept of sustainable agriculture is an “intergenerational” one in which we pass on a conserved or improved natural resource base instead of one which has been depleted or polluted.

Sustainable development: A pattern of resource use that seeks to meet human needs while preserving the natural environment so these needs can be met in the present and in the indefinite future.

Sustainable management: The ability to direct the course of a company, community, organization, country or any activity that restore and enhance all forms of capital (human, natural, manufactured, and financial) to generate stakeholder value and contribute to the well-being of current and future generations.

Subsistence: The means of living; obtaining food and shelter necessary to support life; everything that is done to "make a living."

Subsistence farmer: A farmer who grows just enough food for his family's own needs with little, if anything, left over to sell.

Z

Zero waste: The goal of developing products and services, managing their use and deployment, and creating recycling systems and markets to eliminate the volume and toxicity of waste and materials, and to conserve and recover all resources.