3 AGRICULTURE AND ECOSYSTEMS

VOCABULARY DEFINITIONS

In this curriculum, **food** refers to both food and beverages.

Agriculture

The production of food and goods through farming.

Algal bloom

A rapid increase in the population of algae, often the result of excess **nutrients** in the water. Some algal blooms are toxic to humans and marine life. See **runoff**.

Biodiversity

The variety of organisms living in an **ecosystem**. Domestic biodiversity refers to the diversity among organisms cultivated for human use, in contrast to wild biodiversity.

Climate

The temperature, precipitation, humidity and other weather conditions over a long period of time. Climate is a major factor in what crops can be grown in a region.

Climate change

A significant, lasting change in temperature, precipitation, humidity or other measures of **climate**.[1] The term often refers to the current trend toward higher average global temperatures (global warming) alongside increased frequency and severity of droughts, heat waves, flooding, hurricanes and other weather events. See **greenhouse gases.**

Compost

A dark, crumbly, soil-like material made from decomposed (or decomposing) **organic matter**, such as animal **manure**, food waste, leaves and grass clippings. Compost is applied to soil as a **nutrient**-rich **fertilizer** for plants.[2] See **composting**.

Composting

A form of **waste treatment** that uses fungi, bacteria and other microorganisms to decompose **organic matter**, such as animal **manure** and food waste. Composting can reduce or eliminate **pathogens**, harmful chemicals, plant diseases, odors and air pollution. The end product is a **nutrient**-rich **fertilizer**.[2] See **compost**.

Dead zone

An area of the ocean where most aquatic life cannot survive because the water is depleted of oxygen. **Nutrient** pollution from **fertilizer** and **manure runoff** contributes to dead zones.[3,4]

Dust Bowl

A period of severe dust storms that caused massive crop failures, hunger, and poverty across the Midwestern United States during the 1930s. A rapid expansion of **mechanized** agriculture pulverized the top layer of **soil** and stripped the grasses that held it in place, leaving it dry and exposed to being blown away by wind.[5] See **soil erosion** and **plow**.

Ecosystem

A community of organisms interacting with each other and with their physical environment.[6]

Equity

Justice, fairness or freedom from bias.

Fertilizer

Materials spread on soil to increase its capacity to promote plant growth. Common fertilizers include animal **manure**, **compost**, synthetic (human-made) chemicals and certain minerals.

Food Processing

The practices used by food industries to transform raw plant and animal materials, such as grains, produce, meat and dairy, into products for consumers.[7-9] Examples include freezing vegetables, milling wheat into flour and frying potato chips. Slaughtering animals is sometimes considered a form of food processing.

Food security

Consistent and dependable access to adequate, safe and nutritious food for an active and healthy life.[1] For a region to be food secure, it must have an adequate, stable supply of food even during drought and other difficult conditions; and its people must be able to locate and afford food, even in the presence of an abundant supply.[10]

Food system

See **supply chain**.

Freshwater

Naturally-occurring water that is not salty, as opposed to seawater. Freshwater sources include ponds, lakes, streams and underground aquifers.

Greenhouse gases (GHGs)

Gases that trap heat in the atmosphere. The accumulation of these gases causes global warming, an increase in average global temperatures. Greenhouse gases from human activities and natural processes include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). See **climate** and **climate change**.

Industry concentration

The extent to which a small number of corporations control most of the sales in an industry. Greater industry concentration means that fewer corporations control the majority of sales.[10] For example, the U.S. beef slaughtering, processing, packaging and distribution industries are highly concentrated; over 80 percent of these industries is owned by just four corporations.[11]

Irrigation

Human-made means of delivering **freshwater** to agricultural fields. Irrigation techniques include the use of flooding, canals, sprinklers and drip tape (hose with small holes that release water slowly over time).

Local food

Food that was produced within roughly 100 to 250 miles of where the consumer lives, or food that is sold directly from a farmer to a consumer or nearby retailer.[12] The term is not strictly defined.

Manure

Animal excrement used to **fertilize** land.

Mechanization

The replacement of animal and human labor with machinery. In the food system, routine tasks such as sowing seeds and harvesting crops are often mechanized.[13]

Monoculture

Fields planted with a single crop species over a given season, typically over a very large area.[14,15] Industrialized U.S. crop production is characterized by highly specialized, genetically uniform corn and soybean **monocultures**[16]

Nutrient

A substance used by an organism for energy, growth or maintenance. Plants, for example, require nitrogen, phosphorous, potassium and other chemicals—in addition to water and sunlight—in order to grow and survive. See **dietary nutrient**.

Organic matter

Anything that was once part of a living organism, such as decaying leaves and animal waste. Organic matter is among the most important ingredients of fertile **soil**. See **manure** and **compost**.

Peak oil

The point at which global oil production begins to decline.[17]

Pest

Any organism that threatens human interests. Common pests in agriculture include certain plants (weeds), insects, fungi, rodents, bacteria and other organisms that can kill crops or interfere with their growth.[18,19]

Pesticide

Substances intended to repel, kill or control any species deemed a **pest**. Types of pesticides include herbicides, insecticides and fungicides.[20]

Public health

The science and practice of protecting and promoting the health of communities (as opposed to focusing on individual patients).

Rotational grazing

Moving animals to new areas of **pasture** on a regular basis. Rotational grazing helps to prevent **soil erosion**, promote pasture growth and spread **manure** evenly over land.[21]

Runoff

Water from rain, snow and other natural or human sources that flows over land and washes into waterways. Runoff often carries pollutants it encounters along the way, such as excess **nutrients** and agricultural chemicals.

Soil

The top layer of the earth's surface. Fertile soil aids plant growth by providing root support and serving as a reservoir of air, water and **nutrients**. It is home to countless organisms—many of them beneficial—including bacteria, arthropods, earthworms, fungi, nematodes and protozoa.[22]

Soil erosion

The removal of **soil** from the ground by wind, water and other forces. Erosion contributes to the loss of soil's fertility.

Soil food web

The interactions between living organisms and nonliving **organic matter** in the soil. In the soil food web, every organism becomes food for another. The soil food web offers many services that promote an abundant food supply and human health, such as storing **nutrients** and breaking down certain pollutants.[22] See **ecosystem**.

Supply chain

The people, activities and resources involved in getting food from farms, ranches, rivers, oceans and other sources to consumers' plates. Major stages along the supply chain include production, processing, distribution, retail and consumption. The term **food system** sometimes refers to the supply chain.

Sustainable

Able to be maintained in the long term. It has been argued that for agriculture to be sustainable, it must be ecologically sound[23,24] (practiced in ways that minimize harms to the environment), economically viable (allowing farmers to make an adequate living and produce sufficient food supplies) and socially just.[24] Sustainability has been described more broadly as "meeting the needs of the present generation without compromising the ability of future generations to meet their needs."[25]

Waste treatment

Processes that make waste less of a threat to health and the environment. Human waste, including wastewater from sinks and toilets, is typically treated in order to reduce levels of **pathogens**, toxic chemicals and other harmful substances.

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