

Appendix A) Glossary

A

Acid: a substance with a pH of less than 7.0. Examples: vinegar and lemon juice.

Acre: a unit of area used in land measurement equal to 43,560 square feet (approximately the size of a high school football field excluding the end zones).

Adapt: how animals or plants change to live in a particular ecosystem.

Additive: a substance added to food to preserve flavor or enhance its taste and appearance; includes those of both natural and artificial origin.

Agriculture: the application of the physical, biological, and social sciences and the principles of management to food production, preservation and processing, crop and livestock production, marketing, culture of flowers, turfgrass, and ornamentals, life processes of plants and animals, natural resources management, economic development, agricultural education and communication, and related fields.

Agricultural Biotechnology: the use of living organisms or other biological systems to grow plants and animals that are more nutritious, more resistant to pests and diseases, and more productive.

Agricultural Crop: a crop grown for human food, livestock feed, or consumer and industrial products.

Agricultural Economics: the science that combines the technical aspects of agriculture with the business aspects of management, marketing, and finance.

Agricultural Engineering: the branch of engineering that deals with the design of farm machinery, the location and planning of farm structures, farm drainage, soil management and erosion control, water supply and irrigation, rural electrification, and the processing of farm products.

Agricultural Producer: a farmer or rancher.

Agronomy: the science of interactions between plants, soils, and the environment.

Air Drill: an agricultural implement powered by and pulled by a tractor, which uses air pressure to distribute seeds from a single large tank through tubes into individual rows in the soil. (*Air Seeder*)

Air Drying: a food preservation method that transfers heat through food, causing the water in the food to turn into water vapor that is removed with the air. Examples: solar drying and food dehydration.

Air Seeder: see *Air Drill*

Alfalfa: a deep rooted perennial plant of the pea family that produces lush green foliage with compound leaves that have a high protein content; known as "lucerne" in most countries around the world.

Algae: microscopic organisms that contain chlorophyll and other pigments.

Alkaline: a substance with a pH level greater than 7.0. Examples: lye, milk of magnesia, and ammonia.

Alley: a narrow passageway through which animals move.

American Upland Cotton: see *Upland Cotton*

Amino Acids: organic compounds that link together to form proteins.

Annual Plant: a plant that completes its life cycle in one year or one growing season. Examples: sunflower, wheat, corn, potato, marigold, and tomato.

Anther: the male reproductive organ of a flower.

Aquatic: living or growing in or on the water.

Aquifer: a natural underground storage area for water.

Atrazine: a common herbicide used in producing agricultural crops.

Autosteer: an automatic guidance system that operates agricultural machinery using Global Positioning System (GPS) for accuracy and Geographical Information System (GIS) information to vary operations at specific sites.

Awn: a slender, stiff, bristle-like extension of a plant, such as a beard on a head of wheat.

B

Bacteria: single-celled microscopic organisms that can recycle nutrients, degrade organic compounds, and assist fermentation and other biochemical processes that produce products like cheese and insulin; other bacteria can cause disease or infection in humans, plants, and animals.

Bacterial Contamination: the alteration of physical, chemical, or biological properties caused by bacteria at concentrations that may adversely affect human health, animal health, or the environment.

Balance of Trade: the difference between the value of a country's exports and that same country's imports.

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Balanced Ration: the amount of feed that will supply the proper nutrients in the correct proportions so that an animal can grow or function as desired.

Bale: a large package of compressed raw material like alfalfa or finished material like cardboard, tightly bound with twine or wire and often wrapped.

Baler: an agricultural implement powered by and pulled by a tractor that gathers and compresses plant materials into a bale.

Barley: an annual plant belonging to the grass family of plants that produces several stalks of grain; one of the world's leading cereal grain; also used for malt production and livestock feed.

Batch Pasteurization: see *Vat Pasteurization*

Beard: a slender stiff, bristle-like extension on a flower spikelet that protects the seed kernel.

Bedding Plant: a fast-growing plant grown within a container in a greenhouse or similar structure and transplanted once it reaches maturity.

Bedrock: a solid rock layer at or near the Earth's surface. (*Parent Material*)

Beneficial Insect: an insect that feeds on or destroys pest insect species; may be categorized as either a predator or a parasite.

Beneficial Trait: a desirable genetically determined characteristic.

Berry: (*fruit*) the fruit of a plant like an apple, orange, cucumber, or strawberry that has seeds but no stone or pit; may not be edible, like a pine cone or juniper berry; (*grain*) the entire seed or kernel of plants like wheat or grain sorghum.

Beta-carotene: a highly pigmented (red, orange, and yellow) compound that the human body converts into vitamin A; naturally present in many fruits, grains, oils, and vegetables.

Biennial Plant: a plant that requires two years to complete its life cycle and dies after flowering and forming seeds during the second year of growth. Examples: carrot, onion, red clover, and parsley.

Bind: to bundle cut stalks (with the heads still attached) of grain together, forming sheaves.

Biodegradable: capable of being broken down and decomposed by the action of microorganisms, such as bacteria.

Biodiesel: a biofuel derived from vegetable oils or animal fats; may be used as a replacement for diesel fuel or blended with diesel fuel, which is a petroleum-based fuel.

Biodiversity: the variety of differing organisms that interact in a given area, plus the relative abundance of each.

Bioenergy: the renewable energy produced from organic matter; any material directly or indirectly produced by photosynthesis.

Biofuel: a fuel made from biomass resources, including ethanol, biodiesel, and methanol.

Biomass: any organic (plant or animal) material that is available on a renewable or recurring basis, including agricultural crops and plant residues, wood and wood waste products, and animal wastes.

Biome: a large geographic area with a complex of communities characterized by a distinctive type of vegetation maintained under somewhat uniform climatic conditions.

Bioprocessing: to manufacture products by using microorganisms, cells in culture, or enzymes. Product examples: cheese, yeast bread, and fermented beverages.

Biorefinery: a facility that processes and converts biomass into value-added products, such as biofuels, chemicals, or materials used in the production of other products like biodegradable plastics.

Bioscience: biotechnology and any of the branches of science dealing with the structure and behavior of living organisms.

Biotech: see *Biotechnology*

Biotech Crop: an agricultural crop developed through the use of biotechnology, including the addition, subtraction, or transfer of a gene into the genetic code of a plant.

Biotechnology: a technology that uses living organisms to develop new products (pharmaceutical, diagnostic, agricultural, environmental, etc.) or adds beneficial traits by altering genetic information in plants or animals. (*Biotech*)

Black Sunday: the name given to April 14, 1935, when one of the worst dust storms in history occurred.

Blanche: to protect from the sun, such as tying the outer leaves of a cauliflower plant around the curd to prevent the flower buds from exposure to sunlight.

Botany: the study of plants.

Bran: the seed coat (hard outer layer) of grain; the part of the grain or seed that is an indigestible carbohydrate and may be composed of insoluble or soluble fiber.

Branching Root System: see *Fibrous Root System*

Breeding: (*n.*) the science of changing plants or animals genetically; (*adj.*) capable of reproducing; (*v.*) producing offspring.

Bromegrass: a deep-rooted perennial cool-season grass plant that may remain productive for more than 40 years; used for sod-building, pasture, and baled for hay.

Broomcorn: a type of sorghum grown for the branches and fibers of the seed clusters.

Budding: a plant propagation technique that takes flower buds off one tree or plant, slips them under the bark of the rootstock, and fixes them in place with glue or tape.

Buffer Strip: a strip of permanent vegetation (grasses, trees, or shrubs) located between cultivated fields and bodies of water for the purpose of filtering nutrients, sediments, and other contaminants from runoff waters. (*Filter Strip*)

Bulb: an underground stem or root, usually surrounded by scale-like leaves, that contains stored food for the shoots of the new plant that grows within it.

Bushel: a unit of measure commonly used to measure wheat, corn, and soybeans. One bushel is equal to 60 pounds of wheat or soybeans, 56 pounds of corn or grain sorghum, or 27 pounds of oilseed sunflowers.

By-product: see *Coproduct*

C

Cake: the seed residue from the mechanical extraction of oil.

Calorie: a measurement of the potential energy stored in a food. One calorie approximates the energy (heat) needed to increase the temperature of one kilogram of water by one degree Celsius.

Canning: a food processing method that involves packing food into sealed or airtight containers and heating the containers to a specified internal temperature in the food; results in a waterproof and airtight container that may be stored at non-refrigerated temperatures.

Canola: an annual oilseed plant belonging to the mustard family of plants that was developed in Canada from rapeseed; stalks produce bright yellow flowers that develop seed pods containing tiny seeds with an oil content of about 40 percent.

Canopy: the area of ground covered by a plant's foliage; the layer formed by the leaves and branches of the tallest trees in a forest; said to be a closed canopy when plant growth shades the areas between the trees or plants in contrast to an open canopy that allows direct sunlight to penetrate between trees or rows of plants. (*Plant Canopy*)

Canvas: the surface on which an artist creates his or her work.

Carbohydrate: an essential nutrient that is used by the body to make glucose, which is the fuel that provides energy for the body.

Carbon Cycle: the circulation of carbon through the air, soil, water, and living organisms.

Carbon Sequestration: the process of storing carbon within plants and soil instead of releasing it into the atmosphere as carbon dioxide.

Career: a job or occupation.

Carnivore: an organism that eats animals.

Carotene: the basic building block of vitamin A.

Cash Value: worth expressed as an amount of money.

Casting: see *Earthworm Casting*

Cellulose: a complex carbohydrate that gives plant cells thick walls, allowing plants to stand upright without a skeleton.

Cellulosic Biomass: crops grown specifically for fuel production as well as plant waste products, like wheat straw or sawdust.

Center Pivot Irrigation: a system where water is pumped from a well through a line of water distribution pipes mounted on wheels, which rotate (pivot) in a circle around the center of an irrigated area.

Cereal Grains: a crop category that includes grain crops that produce seeds used as food by people, like wheat, grain sorghum, oats, rice, and barley.

Chaff: the dried plant material covering the seeds or kernels of grain that is discarded during the harvesting process.

Chemical Extraction: see *Solvent Extraction*

Chinook Winds: the wind patterns observed where the Great Plains end and the mountains begin that can elevate winter temperatures for a few hours or days, at the end of which the temperatures plummet back to base levels.

Chlorophyll: the green pigment in leaves and other plant tissue that is responsible for absorbing light energy during photosynthesis.

Christmas Tree Farm: a farm where trees are grown and harvested for use as Christmas trees and related decorations.

Chromosome: a distinct unit of a genome carrying many genes; each chromosome is a long molecule of double-stranded DNA, plus an approximate equal mass of protein; can only be seen during cell division.

Chute: a type of livestock handling equipment that restrains an individual animal for examination or treatment.

Clay: the smallest mineral particles that make up soil; so small that they may only be seen through electron microscopes.

Climate: the average weather conditions of a specific site during a particular set of dates, including the average rainfall, temperature, humidity, and wind conditions.

Climatologist: a scientist who investigates, explores, and evaluates climate and weather data.

Cloud Seeding: a method of causing a cloud to give up its moisture as rain, especially by releasing particles of dry ice or silver iodide into cold clouds, which causes water droplets to form into raindrops.

Coarse Grains: a crop category that includes corn and grain sorghum.

Cole Crops: a crop category that consists of cool season plants belonging to the mustard family of plants that trace their origin back to the wild cabbage plant, like cabbage, cauliflower, mustard, broccoli, turnip, and Brussels sprouts.

Coleoptile: a pointed protective sheath of plant tissue enclosing the emerging embryonic plant in monocots.

Combine: a self-propelled grain harvesting machine that cuts and gathers plant materials, threshes the plant materials to separate out the seeds, and stores the seeds while discharging the other plant materials (chaff); also known as a combine harvester.

Glossary

Commodity: an item with value that can be bought or sold.

Community: all the organisms in a particular habitat that are bound together by the food web and other interrelationships.

Complex Carbohydrate: a carbohydrate that takes longer to break down into glucose; usually does not taste sweet. There are two types of complex carbohydrates: starch and dietary fiber.

Compost: a mixture of organic materials in various stages of decay.

Compound Leaf: a leaf subdivided into two or more leaflets, each with a separate attachment along a vein in the leaf. The entire leaf has a single attachment to the stem of the plant.

Compound Machine: a machine that functions by using two or more simple machines working together as one.

Concentrate: a type of animal feed that is low in fiber and has nutrients that are easy for the animal's body to digest and use. Examples: pelleted grain products and dog food.

Condensation: the formation of a liquid from a vapor due to the cooling of the vapor.

Conditioning: (*grain storage*) cleaning, drying (if necessary), and preparing grain for storage to preserve the quality of the grain while in storage; (*flaking or oil extraction*) see *Tempering*.

Confection Sunflower: see *Non-oil Sunflower*

Conservation: the wise and intelligent use of natural resources in a way that assures their continuing availability to future generations.

Conservation Practice: a specific treatment, such as a structural or vegetative measure, or management technique used to meet specific needs in planning and implementing conservation.

Conservation Reserve Program (CRP): a conservation program in which landowners plant long-term, resource conserving plants to improve water quality, control soil erosion, and enhance wildlife habitat.

Conservation Tillage: any tillage and planting combination or sequence of tillage operations that minimizes or reduces soil and water loss by leaving at least 30 percent of the soil surface covered by the residue of the previous year's crops.

Consumer: (*food web*) a living organism that feeds on trees and green plants or eats other organisms that have already fed on the trees or green plants; (*economic*) a purchaser of goods or services.

Containerized Cargo: freight that is enclosed in a shipping container. The freight inside the container is not handled when the mode of transportation is changed, like when the container is moved from a truck onto a railcar or from a railcar onto a ship.

Continuous Cropping: planting only one crop on the same land for two or more consecutive growing seasons.

Continuous Pasteurization: a pasteurization method using pressurized liquids flowing through metal plates or tubes that are heated from the outside by hot water or steam.

Contour Farming: performing tillage and planting operations on the contour – following a slope around an elevation rather than up and down it – for the purpose of soil conservation.

Coproduct: an additional product resulting from the production of the primary product. For example, soybean meal is a coproduct from the production of soy oil while distillers grains and carbon dioxide result from the production of ethanol. (*By-product*)

Corn: a member of the grass family of plants that produces ears with multiple rows of kernels; the most widely distributed agricultural crop in the world.

Corn Oil: the oil extracted from the germ of the corn kernel.

Cornmeal: the flour ground from the whole kernel of corn.

Cornstarch: a dense powder obtained from the endosperm of the corn kernel.

Corn Sugar: a sugar from corn that has no chemical bond between the fructose and the other sugars, primarily glucose; contains the same number of calories as table sugar. (*High Fructose Corn Syrup*)

Corral: an enclosure or pen for confining livestock.

Cotton: a shrub-like perennial plant that produces seeds surrounded by fibers inside capsules (bolls); grown as an annual plant in the United States.

Cotton Boll: the rounded capsule of the cotton plant that surrounds the seeds and the fibers attached to the seeds.

Cotton Oil: the oil that is extracted from the cottonseed kernels after the hulls and cotton linters have been removed. (*Cottonseed Oil*)

Cotton Square: the part of the cotton plant that develops into self-pollinating blossoms that wither and fall off the plant's branches at the bolls; the flower bud of the cotton plant.

Cotyledon: the part of a plant's embryo that stores food used during germination and supports a developing plant until it is capable of producing its own food; either remains in the seed or emerges following germination depending on the plant species.

Country House: a local grain elevator that serves as a collection point for grain produced on farms within the immediate area.

Cover Crop: a crop planted to prevent erosion or to add organic matter or nitrogen to the soil rather than for the harvest of the seeds or plants.

Cradle of Civilization: see *Mesopotamia*

Crop: the cultivated plants grown on land specifically designated for cultivated plants.

Cropland: any land available for the cultivation of plants or agricultural produce, such as grain, vegetables, or fruit.

Crop Residue: the portion of a plant or crop (stems, leaves, roots, etc.) left in a field after a crop has been harvested.

Crop Rotation: a planned sequence of growing crops versus continuously growing only one crop on the same area of land year after year.

Cross-pollination: the transfer of pollen between flowers on two different plants.

Cross-contamination: the transfer of potentially harmful substances or disease-causing microorganisms from raw food or surfaces that touch raw food to cooked or ready-to-eat foods.

Crush: the process of extracting oil from oilseeds; often used in reporting data.

Cultivar: a new plant usually propagated (created) through cuttings, grafting, or tissue culture rather than grown from seed; a shortened term for "cultivated variety." Seeds of cultivars usually do not reproduce plants identical to the parent plant.

Cultivate: to prepare the land in order to grow a crop.

Cultivation: a tillage method performed to prepare the land to grow crops or to control weeds.

Curd: (*cheese*) the solid lumps formed when milk coagulates that are used to make cheese; (*soybean*) the soft white gel-like result of curdling soy milk; curds are pressed together once the liquid is strained off to form tofu; (*cauliflower*) the tight cluster of flower buds that form the head of a cauliflower plant.

Custom Cutter: see *Custom Harvester*

Custom Harvester: an individual, family, or group of individuals whose business is to harvest crops for others, providing the equipment necessary to harvest and deliver a crop to storage in exchange for payment. (*Custom Cutter*)

Cutting: a vegetative plant part like part of a stem, leaf, or root that has been severed from the parent plant in order to grow a whole new plant.

D

Decay: the progressive deterioration of organic tissues, usually caused by fungi or bacteria, resulting in loss of cell structure, strength, and function.

Decompose: to break down into simpler parts.

Decomposer: an organism that recycles nutrients and makes them available for either producers or consumers in the food web to use.

Decomposition: the biological process of breaking down complex molecules in dead organic materials into simpler molecules.

Deforestation: the removal of trees and other vegetation without replanting or allowing time for the forest to regenerate.

Dehulling: removing the outer seed shell, as in a sunflower seed or cottonseed, or the outer seed coat of the kernel as in a soybean. (*corn*) see *Shelling*.

Dehydration: a food processing method that removes water from food in order to prevent microorganism growth or spoilage.

Demonstration Plot: a plot of land used or planted specifically as a research demonstration to show the characteristics or evidence of differences between plant varieties, crop protection products, or farming practices; also called a test plot. (*Variety Demonstration Plot*)

Dent Corn: a type of corn characterized by distinctive indentations that form on both sides of the kernels when the corn is mature and ready for harvest.

Dessicate: to dry.

Determinate Plant: a plant that follows a genetically pre-determined pattern of growth and fruit production such as a tomato plant that stops growing when the tomatoes begin to fill, ripening all the fruit at the same time and allowing the plant to be mechanically harvested.

Dicot: a flowering plant with two cotyledons, such as sunflower, soybean, tomato, and pumpkin. A dicot has broad leaves with branched veins, a taproot, and flower parts that are arranged in fours and fives or multiples of fours and fives. (*Dicotyledon*)

Dicotyledon: see *Dicot*

Dietary Fiber: a complex carbohydrate that includes all the parts of plant foods that the human body cannot digest or absorb.

Diploid: an organism with two chromosomes of each kind.

Direct Consumption: the consumption of energy stored in plant materials by eating plants or plant parts.

Disease: a departure from normal metabolism that reduces an organism's normal potential for growth and reproduction.

DNA: Deoxyribo Nucleic Acid; an acid in a cell's nucleus that carries the genetic information; two long chains of nucleotides twisted into a double helix that determines individual hereditary characteristics.

Dollar Value: the value expressed in terms of U. S. dollars.

Domestic: produced, distributed, sold, or occurring within a single country.

Domestic Water Use: the use of potable water for everyday living.

Dormancy: in plants, a period of inactivity during winter or periods of cold.

Doubled Haploid: a plant containing twice the number of chromosomes the plant contained before the chromosomes of a haploid plant were induced to duplicate themselves in the laboratory. Each pair of double chromosomes is genetically identical and the doubled haploid remains 100 percent genetically pure.

Dredging: an excavation activity usually carried out at least partially underwater with the purpose of gathering sediment, such as sand or gravel, and depositing it elsewhere.

Drill: an agricultural implement powered and pulled by a tractor, which has one or more seed boxes – each with several openings that allow seeds to continuously drop into the soil.

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Drought: a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions.

Dryland: cropland that is not irrigated.

Dry Milling: an ethanol production process in which the entire seed (corn kernel, sorghum berry, or wheat kernel) is ground into flour before processing.

Dry Onion: a mature onion bulb with multiple layers of thick, papery skin, a higher percentage of solids, and a more intense flavor; also called a storage onion or a dry bulb onion.

Dust Bowl: a description of the western Great Plains of the United States, which suffered severe wind erosion and drifting soil during the drought years of 1933–1940.

E

E10: a blend of 10 percent ethanol and 90 percent unleaded gasoline.

E85: a blend of 85 percent ethanol and 15 percent unleaded gasoline, for use in flexible fuel vehicles.

E. Coli: see *Escherichia Coli*

Earthworm Casting: the waste excreted by an earthworm.

Ecofallow: see *Summer Fallow*

Ecosystem: a natural unit that includes living and non-living parts interacting to produce a stable system in which the exchange of materials between the living and non-living parts follows closed paths.

Edamame: green (immature) soybeans still in the pod that are bigger and sweeter than the traditional soybeans; also known as vegetable soybeans, green vegetable soybeans, and sweet beans.

Edible: fit for consumption, especially by humans.

Embryo: the only living part of a seed; the part of a seed where a new plant begins to form. (*Germ*)

Emigrant: as used historically, a person who moved (migrated) away from one region of a country to another region of the same country.

Endosperm: the largest part of a seed; serves as the food source for the seed's embryo until the embryo can produce its own food.

Enology: the science dealing with wine and wine making.

Enriched: in the final product, nutrients lost during processing have been replaced in the same amounts; also applies to products that meet the U.S. Food and Drug Administration's definition for a type of food with a name that includes the term "enriched," like enriched flour or enriched bread.

Ensile: to preserve green plants as silage by tightly packing chopped pieces of the plants into an enclosed space and allowing the materials to ferment and become acidified.

Entrepreneur: a person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk.

Environment: the sum of all external conditions and influences, living and non-living, that affect the development and ultimately the survival of an organism or group of organisms.

Erosion: the detachment and movement of soil or rock by water, wind, ice, or gravity.

Escherichia Coli: a group of diverse bacteria, some of which are not harmful and some that result in serious illness. (*E. coli*)

Essential Amino Acids: a group of amino acids that cannot be produced by the body and must be supplied in the diet; animals and people do not require the same essential amino acids.

Essential Nutrient: a nutrient that must be obtained from dietary sources because the body cannot manufacture the nutrient in needed amounts. Essential nutrients for humans and animals are water, proteins, carbohydrates, vitamins, minerals, and fats.

Ethanol: an alcohol made by fermenting and distilling simple sugars; ethyl alcohol.

Evaporation: the process of changing from a liquid to a gas by exposure to air, heat, or both.

Evapotranspiration: the process of transferring moisture from the ground to the atmosphere by evaporation of water from the soil and transpiration from plant leaves.

Evergreen: a tree that has leaves year-round; considered a softwood.

Export: (*n.*) a product or commodity that moves out of a country for sale or trade; (*v.*) to send goods to other countries for sale or trade.

Export Elevator: a large grain elevator that sells and ships grain to customers in other countries, typically located on a port or river.

Extraction: the process of removing oil from oilseeds by mechanically squeezing the oil out of the seeds or with the use of a solvent that removes the oil from the seeds.

Eye: a node where buds form that will start the growth of a new plant, such as a potato.

F

Fallow: unplanted.

Family: a group of individuals descended from a common ancestor.

Fat: organic compounds made up of carbon, hydrogen, and oxygen that are a source of energy in foods and provide essential fatty acids that are not made by the body.

Fatty Acids: the building blocks of fat molecules; during digestion, the body breaks down fats into fatty acids, which can then be absorbed into the blood and used by the body for energy and tissue development.

Feed Crop: a crop that is grown for animal consumption.

Feed Grains: a crop category that includes grain crops fed to livestock, such as corn and grain sorghum.

Feed Value: an analysis of the main nutrients that make up each type of feed used in a ration; used to formulate rations that balance nutritional needs with the costs of the individual ration components.

Feedlot: an area where cattle are fed to market weight; may be subdivided into large pens. (*Feedyard*)

Feedstock: a product used as the basis for manufacturing another product.

Feedyard: see *Feedlot*

Fermentation: the chemical changes brought about by enzymatic activity, such as the conversion of carbohydrates in food into acids by using microorganisms like yeast or bacteria.

Fertile: rich in nutrients; highly productive.

Fertile Crescent: the half-moon shaped area of land that stretched from the southeastern coast of the Mediterranean Sea around the Syrian Desert north of the Arabian Peninsula to the Persian Gulf, with rich, fertile soil and a favorable climate for growing crops that encouraged the domestication of plants and animals.

Fertilizer: any organic or inorganic material of natural or synthetic origin (other than liming material) that is added to soil to supply one or more plant nutrients essential to the growth of plants.

Fiber: long strands of molecules interwoven to form a linear, string-like structure; may be natural or manmade.

Fiber Crops: a crop category consisting of plants that produce a natural fiber, like cotton, flax, hemp, jute, and sisal.

Fibrous Root System: a root system with many shallow, small thin branching roots. Corn, grain sorghum, and wheat have fibrous root systems. (*Branching Root System*)

Field Border: a strip of perennial grass or legumes along and around the edge of a crop field.

Field Corn: corn grown for optimal kernel production.

Filter Strip: see *Buffer Strip*

Flaking: stretching and flattening seeds down to a thickness of 10-12 thousandths of an inch.

Flash Freezing: a food processing method that subjects food to temperatures well below the freezing point (32 degrees Fahrenheit), causing the water inside the food to freeze very quickly.

Flavonoid: a compound naturally produced by plants and categorized according to chemical structure.

Flax: an annual plant grown both for its seeds and its fibers, which are extracted from the stems and used to produce linen, a textile. Flax seed is the source of linseed oil.

Flight Zone: the point at which an individual animal becomes agitated or fearful and wants to move away from the source of agitation.

Florets: the small individual flowers that form a larger flower head, such as in a sunflower.

Floriculture: the cultivation of flowering and ornamental plants.

Flour: the powder produced by grinding or milling grain.

Folate: a B vitamin that occurs naturally in foods like pinto beans, sunflower seeds, peanuts, asparagus, spinach, broccoli, and citrus fruits.

Foliage: the leaves of a plant or tree; primarily responsible for photosynthesis.

Foliage Plant: a plant grown primarily for its decorative leaves rather than its flowers or fruit.

Folic Acid: the synthetic form of folate added to fortified foods.

Food Crop: a crop that is grown for human consumption.

Food Safety: producing, handling, preparing, and storing food so as to prevent foodborne illness.

Food Sorghums: the specific varieties of grain sorghum that produce a white berry (kernel) used to make white flour for human consumption.

Food Web: the transfer of energy from one organism to another as an organism is consumed (eaten).

Foodborne Illness: an illness resulting from the consumption of contaminated food, usually occurring as a result of improper handling, preparation, or storage of food.

Forages: a category of plants grown to provide feed for animals, like brome grass, alfalfa, and forage sorghum; includes crop residues fed to animals.

Forb: a plant with stems and broad flat leaves that dies down to the soil level at the end of each growing season; often referred to as a weed or wildflower. Examples: prairie coneflower, butterfly milkweed, and sunflower species native to Kansas.

Forest: an ecosystem dominated by trees.

Forestry: the science of managing and caring for forests.

Fortified: the final product contains nutrients that are not naturally in the product or are in amounts greater than those naturally found in that product.

Fossil Fuels: naturally occurring hydrocarbon compounds that represent the altered remains of organic materials enclosed in rock, such as coal, petroleum (crude oil), and natural gas.

Glossary

Franchise: the right or license granted by a company to an individual or group to market its products or services in a specific territory.

Free-range: a marketing term; certification only available for poultry, which must have access to the outdoors according to U.S. Department of Agriculture regulations.

Fresh Onion: see *Green Onion*

Fresh Market Onion: see *Green Onion*

Freeze Drying: a food preservation method that is a form of dehydration, in which the food product is frozen and water is removed as vapor through a process called sublimation. (*Lyophilization*)

Freezing: a food preservation method where food is stored at zero degrees Fahrenheit, inactivating microorganisms but not killing them.

Fruit: a term typically used to describe the fleshy seed-associated structures of certain perennial plants, usually sweet-tasting; scientifically, a fruit is defined as the reproductive structure of a seed plant.

Fungus: a simple plant-like organism that lacks chlorophyll and therefore obtains its nutrients by living on or in other organisms (parasitically), by living with other organisms (symbiotically), or by breaking down dead organic materials (saprophytically).

Fungicide: a pesticide that controls fungi.

G

Gear: a wheel with teeth or pegs meshed together with another wheel with teeth or pegs to increase or decrease motion and force; used to increase or decrease speed and power.

Gene: a DNA segment that occupies a specific place on a chromosome and carries the hereditary characteristics; the basic biological unit of heredity.

Gene Mapping: the science of locating and identifying the position of genetic markers along a chromosome of a particular species.

Genetics: the science of heredity.

Genetically Engineered: improved through the use of modern tools, such as biotechnology. (All plant breeding is genetic modification, even the selection of only seeds from plants with desired traits for replanting or cross-pollination and the transfer of flower pollen from one plant to another to create a combination of genes from both plants.) (*Genetically Modified*)

Genetically Modified: see *Genetically Engineered*

Geneticist: a person who studies or specializes in the science of genetics.

Genome: one complete set of chromosomes; the entire genetic material.

Genus: the name for a group of plants that have similar characteristics and are more closely related to each other than to plants in any other genus.

Geographical Information System (GIS): a computerized system of collecting, analyzing, and displaying information specific to geographical references.

Germ: the living part of seed from which a new plant may develop. (*Embryo*)

Germinate: to begin to grow.

Germplasm: a collection of genetic resources for an organism.

Glacier: a large mass of compacted ice.

Global Positioning System (GPS): a navigational tool based on satellites orbiting the Earth and transmitting signals that allow GPS receivers to determine the receiver's location, speed, and direction.

Global Warming: an average increase in the temperature of the atmosphere near the Earth's surface and in the part of the Earth's atmosphere where most weather changes occur.

Gluten: a protein formed when flour and water are mixed together; gives bread its elasticity, strength, and gas-holding properties.

Glycerin: a product of transesterification, the chemical process used to produce biodiesel from vegetable oil; used in soap, lotion, and other consumer products.

Grading: the voluntary assessment of quality characteristics based on nationally uniform federal standards.

Grafting: a propagation technique where branches from one or more trees or plants are attached onto rootstock.

Grain: a small hard seed produced by a plant that is a member of the grass family of plants, like wheat or corn; (*rice*) the seed of the rice plant, which is categorized according to the length of the seed i.e. short-grain, medium-grain, or long-grain.

Grain Crops: a category of plants that produce a small hard seed, like wheat, corn, and grain sorghum.

Grain Elevator: a structure for storing and handling grains and oilseeds; a business that buys, stores, and sells grains and oilseeds.

Grain Food: a food product with over one-half its weight made up of enriched or whole grain flour, meal, or other grain ingredients. Examples: bread, cereal, and crackers.

Grain Sorghum: a self-pollinating plant belonging to the grass family of plants that produces strong stalks with a single head of grain at the tip of each stalk; grown as a feed grain in the United States although it is the fifth leading cereal grain worldwide. (*Milo*)

Grass: the family of plants characterized by hollow jointed stems and bladelike leaves.

Grassed Waterway: a natural or constructed channel used to carry water from natural precipitation through or from cropland.

Grassland: an area covered with vegetation types dominated by grasses, including tame pasture and rangeland.

Graze: to feed on growing plants.

Grazing: (*v.*) the act of feeding on growing plants; (*adj.*) a type of animal that feeds on growing plants.

Great Plains: a major ecological region in the central part of the continent of North America, extending from the Canadian provinces of Alberta, Saskatchewan, and Manitoba south into northeastern Mexico and from western Indiana to the foothills of the Rocky Mountains; in Kansas, commonly used to identify the western two-thirds of the state.

Green Onion: an immature onion bulb (one to two inches in diameter) with green tops that may be edible; typically has a higher water content and is sweeter and milder than a storage onion. (*Fresh Onion*) (*Fresh Market Onion*)

Greenchop: high-moisture plant material chopped into small pieces in the field and immediately fed to livestock

Groundwater: underground water that is generally found in the pore spaces of rocks or sediments.

Grove: a naturally occurring stand of trees; may be managed to increase the output of fruit or nuts.

Growing Degree Days: the necessary number of days at optimal air temperature (the temperature at which a plant will grow best) for a specific plant variety to reach maturity. (*Growing Degree Units*) (*Heat Units*)

Growing Degree Units: see *Growing Degree Days*

Growing Season: the period during which plants can grow, specifically defined as the time period between the day of the last frost (freezing low temperature) in the spring and the first frost in the fall.

H

Habitat: the area that provides an organism with adequate food, water, shelter, and living space and the conditions of that environment including the soil, vegetation, water, and food.

Haploid: a plant that possesses one-half the normal number of chromosomes (one chromosome, rather than the normal two, from each pair of parent plants).

Hardwoods: the tree category based on broad-leaved trees.

Harney Silt Loam: a very deep, well-drained soil that was formed by wind-blown silt (loess) and covers almost four million acres in Kansas; the official state soil of Kansas.

Harvest: to gather a crop from the field.

Hay: fine-stemmed dry forage that is usually seeded with a drill, cut or swathed, and baled to use as livestock feed.

Haylage: partially fermented coarse plant materials kept in a succulent and slightly sour condition; used as livestock feed.

Header: the large detachable piece of agricultural equipment at the front of a combine that cuts the plant stalks or strips the heads of grain from the stalks.

Head House: the structure housing most of the grain handling equipment like belt conveyors and cleaners; traditionally built at the top of the storage silos of a grain elevator.

Healthy: (*label*) must meet specific criteria that limits the amounts of fat, saturated fat, cholesterol, and sodium, and required to contain specific minimum amounts of vitamins, minerals, or other beneficial nutrients; defined by federal law.

Heat Units: see *Growing Degree Days*

Heliotropism: the action of plants like sunflowers that follow the sun from east to west during the day and return to the east each morning.

Herbaceous: a plant with fleshy, rather than woody, stems that dies back to the soil level after each growing season.

Herbicide: a pesticide that controls weeds or plants growing where they are not wanted.

Herbicide Tolerant: a plant that is immune to and unaffected by a specific herbicide.

Herbivore: an organism that eats plants.

Hermetic: completely sealed; airtight and waterproof.

High Fructose Corn Syrup: see *Corn Sugar*

Homestead Act of 1862: the federal law that gave title to 160 acres of undeveloped land to a person who was at least 21 years old who built a house at least 12 feet by 14 feet and lived in it for at least five years.

Honey: the sweet substance produced by honeybees from the nectar or secretions of living parts of plants.

Hopper: an unloading compartment built into a sloped floor, which directs the flow of grain out of the compartment.

Hormone: a chemical substance produced in the body that controls and regulates the activities of certain cells or organs, like insulin that is produced by the pancreas and regulates how the body utilizes sugar; a synthetic substance that acts as a hormone.

Hormone Free: a marketing term; banned from any meat product labels by the U. S. Department of Agriculture, which also prohibits the use of hormones in the raising of poultry and hogs.

Horsepower: a rating of the output of an engine; horses are no longer involved in the calculations of this measurement.

Horticulture: the science or art of cultivating plants like fruits, vegetables, flowers, or ornamental plants that are used by people for food, medicine, and decorative purposes.

Horticultural Crops: a crop category that includes fruits, vegetables, flowers, and ornamental plants; also categorized as agricultural crops.

Glossary

Humid Continental Climate: a climate type characterized by cold winters and hot summers, with most of the precipitation falling during the summer or spring.

Humid Subtropical Climate: a climate type characterized by long hot summers, short mild winters, and rainfall year round.

Hundredweight: a measure of 100 pounds; grain sorghum is sold by the hundredweight rather than by the bushel like most other grains and oilseeds.

Hybrid: a plant produced by breeding two genetically unlike parents to create an offspring with more favorable characteristics.

Hybrid Seed: seed produced by controlling pollination and allowing only specific genes to be transferred to seed-producing plants; results in a plant with specific characteristics that is unable to produce seed for future plants with the same exact characteristics.

Hydro: from an Ancient Greek preface meaning water.

Hydrogenation: the process of transforming liquid oils into solid fats.

Hydrologic Cycle: the complete cycle of water movement from the atmosphere to the Earth and back again through evaporation, transpiration, condensation, precipitation, percolation, runoff, and storage. (*Water Cycle*)

Hydrosphere: the collective mass of water found on Earth's surface, in the atmosphere, and underground in aquifers.

I

Immersion: the process of extracting oil by submerging oilseed flakes in solvent.

Immigrant: a person who moves (migrates) into a different country.

Implement: an agricultural machine used for a specific purpose; usually powered by and pulled behind a tractor. Examples: a grain drill, planter, baler, or plow.

Import: (*n.*) a good that moves into a country for sale or trade; (*v.*) to move goods into a country for sale or trade.

Indeterminate Plant: a plant that continues to grow and produce fruit as long as the plant is alive.

Indirect Consumption: the consumption of energy stored in plant materials by eating food produced by or from plant-eating animals, like meat, milk, or other dairy foods.

Industrial Biotechnology: the application of biological tools, such as microbes or enzymes, to manufacturing and chemical processes.

Industrial Water Use: the use of water for a wide range of purposes by industries, including cooling water for electrical power generation, manufacturing, food preparation, washing of wastes, etc.

Inedible: not edible; not fit to be eaten.

Infiltration: the process in which water is absorbed into the soil or becomes part of a body of water.

Ingredient List: a list of all the food components used to prepare a food product; must be included on the information panel label on a packaged food product.

Inorganic: composed of matter that is not animal or vegetable.

Inorganic Fertilizer: a fertilizer that is either mineral-based or created from materials that are not from plant or animal sources.

Inorganic Matter: material that is mineral-based, rather than originating from animal or plant sources, and disintegrates through weathering.

Input: a product or material needed to produce the final product. Examples: seeds and fertilizers for a crop or ingredients for a recipe.

Insectary: a commercial business that produces and sells beneficial insects.

Insecticide: a pesticide that controls insects.

Inspection: the mandatory examination of food products to assure that the products are safe, wholesome, unadulterated, and properly labeled and packaged; includes the examination of places where food products are sold or prepared.

Integrated Pest Management: a process that determines which actions will be taken to control pests; specific to the particular crop, pest, and situation.

Intermodal: the transfer of products involving multiple modes of transportation.

Irrigation: the intentional application of water to the soil, usually for the purpose of crop production.

J

Jet Stream: a relatively narrow band of strong wind in the upper levels of the atmosphere that blows from west to east.

K

Kernel: the seed of a cereal grain; the edible content of a nut or sunflower seed.

Knot: in cut wood, a hard dark-colored patch at a point where a branch or stem formerly grew out of the tree.

L

Lactation: the secretion of milk or the period during which milk is formed.

Lake: a body of water – usually over 10 acres in size – that is too deep for plants to grow to the surface, except around the shore.

Land Grant University: an educational institution designated by a state legislature or Congress, which was established through a grant of federal land under the Morrill Acts of 1862 and 1890. The original mission of the land grant universities included teaching agriculture, military tactics, and the mechanical arts.

Leaflet: in a compound leaf, the individual blade attached to a single vein in the leaf.

Legume: a plant in the family of plants that can convert nitrogen from the air to nitrates in the soil through a process known as nitrogen fixation. Examples: alfalfa, clover, pea, bean, soybean, and peanut.

Life Cycle: the phases, changes, or stages through which an organism passes during its lifetime.

Linen: fabric made from the fibers produced by flax plants.

Linseed Oil: oil from the seeds of the flax plant.

Lint: long cotton fibers (1 to 1.75 inch long) that are cleaned, straightened, and spun into thread or yarn.

Linters: the short fibers (fuzz) attached to the cottonseed; used in a wide variety of consumer and industrial products.

Lipid: a source of stored energy that is the main component of plant and animal cells along with carbohydrates and proteins; a substance like a fat, oil, or wax that dissolves in alcohol but not in water.

Listeria: a group of bacteria that can be passed from water, soil, and animals to fresh produce and meat products; can cause a serious illness in people, especially at-risk individuals with weakened immune systems and pregnant women.

Livestock: animals raised for food or other products or kept for use, especially farm animals.

Local: a marketing term with no generally accepted definition in terms of the distance between production and consumption. Retailers set their own standards for "local" products, which may be based on where the food is grown or how many miles or hours the food is transported to where it is sold or consumed.

Loess: the fine-grained sediment left behind by receding (melting) glaciers.

Low Temperature Preservation: refrigerating or freezing foods to reduce the growth rate of microorganisms and slow down any physical or enzymatic reactions.

Lucerne: see *Alfalfa*

Lumber: harvested wood processed into boards at a sawmill; woods of specific lengths and thickness used as construction materials.

Lyophilization: see *Freeze Drying*

M

Machinery: implements, tractors, combines, and other harvesting equipment used on a farm or ranch.

Maize: another name for corn; historically used by the American Indians and still used in many countries today.

Market Value: the amount that a seller could expect to obtain for goods or property.

Mature Tree: a tree that has reached at least 75 percent of its final height and spread.

Meal: the coarsely ground and sifted grains of a cereal grass; the high-protein residue that remains after oil is extracted from oilseeds.

Measure: to determine the size or amount of something.

Meat: the edible part of animal tissue.

Mechanical Extraction: the process of obtaining oil from oilseeds by physically squeezing oil out of intact (whole) seeds, usually seeds that have been heated or cooked. (*Pressing*)

Medical Biotechnology: the use of biological processes to detect, diagnose, and treat diseases, as well as develop and manufacture vaccines and medicines; also includes the use of genetic information to develop individualized medical treatments.

Mesopotamia: "land between two rivers," refers to the basins of the Tigris and Euphrates rivers and the geographical area watered by these two rivers. (*Cradle of Civilization*)

Metabolism: the chemical processes occurring within a cell or organism that are necessary for the maintenance of life; the conversion of food into energy and other products needed to sustain life.

Microclimate: the climate of a confined space or a small geographic area, including the temperature, humidity, wind conditions, and precipitation.

Microorganism: an organism too small to be seen without a microscope.

Milling: the process of grinding seeds and sifting the particles to produce flour.

Milo: see *Grain Sorghum*

Mineral: a natural compound with a definite chemical structure and formula that has formed through geological processes; inorganic.

Miscella: a solution of oil and solvent.

Miso: a fermented soybean paste used for flavoring in many Japanese foods.

Mold: the wooly growth found on the surface of damp or decaying matter or on living organisms; a fungus.

Glossary

Mollisol: a highly fertile soil – enriched with large amounts of organic matter – that can hold large amounts of water and has a distinctive dark color.

Monocot: a plant that produces an embryo with one cotyledon, such as wheat, corn, grain sorghum, grass, onion, and tulip. A monocot has long narrow leaves with parallel veins, fibrous roots, and flower parts that are arranged in threes or multiples of threes. (*Monocotyledon*)

Monocotyledon: See *Monocot*

Monounsaturated Fat: a type of unsaturated fat that starts to turn solid when chilled; found in a variety of foods and oils.

Mosaic: a decoration on a surface made by placing items of different colors into another material to make a pattern or picture. A crop mosaic uses plants and seeds.

Mower: an implement used to cut standing plants, much like a lawnmower cuts grass.

Mutation: a change in a gene or chromosome; may result in the creation of a new characteristic or trait.

N

Natural: (*food*) a marketing term with no regulatory definition. However, the U.S. Food and Drug Administration (FDA) does not object to the use of the term if the food does not contain added color, artificial flavors, or synthetic substances.

Natural Fiber: a fiber of plant or animal origin.

Natural Process: a physical process that occurs without human interaction.

Natural Resource: a raw material provided by the Earth that may be processed into useful products.

Net Weight: the amount of food inside a package by weight.

Nitrogen: a nutrient used by plants to manufacture proteins, which are used by plants to grow, develop, and produce seeds.

Nitrogen Cycle: the circulation of nitrogen through the air, soil, water, and living organisms.

Node: the part of a plant that holds a bud that can grow into leaf, flower, stem, or root; stems have nodes but roots do not.

Nonfood Crop: a crop that is grown for uses other than human or animal consumption.

Non-oil Sunflower: a sunflower plant that produces black-colored sunflower seeds with white stripes, approximately 5/8 inch long, which are used for baking, eating, birdseed, and pet food. (*Confection Sunflower*)

Nonrenewable Resource: a resource, such as a fossil fuel, that is in limited supply and does not have the capacity to be replaced through natural processes, at least not for many thousands of years.

Non-ruminant: an animal with only one stomach compartment that swallows food once without regurgitation.

Non-vascular Plant: a plant like moss that only absorbs water through the plant's surfaces.

Norovirus: an extremely contagious virus belonging to a family of viruses found in the vomit or fecal material of infected people, causing symptoms associated with the stomach flu; cannot be treated with medicine and there are no vaccines to prevent norovirus infections.

No-till: a continuous process of crop production in which the soil is not mechanically manipulated between the harvest of one crop and the planting of the next crop. The surface of the soil and the residue from previous crops is left virtually undisturbed during planting.

Nursery Crop: a plant grown in a greenhouse or outdoor nursery until the plant is large enough to be planted in a more permanent location.

Nutmeat: the seed kernel of a tree nut.

Nutrient: a substance needed for an organism to grow and function properly.

O

Oat: an annual plant belonging to the grass family of plants that produces stalks with numerous branches bearing the grain; a cereal grain widely grown for livestock feed and also used for food products like oatmeal, rolled oats, and oat flour.

Oil: a slippery liquid substance obtained from plants, animal fats, minerals, or synthetic substances; will not mix with water and remains liquid at room temperature.

Oilseed: a plant that produces seeds that are rich in oil, like soybean, sunflower, canola, cotton, and flax; the oil is extracted primarily from the plant's seeds, rather than other parts of the plant.

Oilseed Sunflower: a sunflower plant that produces small shiny black sunflower seeds that yield oil for baking, frying, and food products.

Omnivore: an organism that eats both plant and animal materials.

Orchard: an area of land planted to fruit or nut trees, typically planted in rows and spaced to allow the development of a large canopy of branches.

Organic: referring to or derived from living organisms; (*labeling*) must meet U.S. Department of Agriculture (USDA) standards in the way it is grown or produced. In order for the USDA organic seal to appear on product packages and in advertisements, products must consist of at least 95 percent organically produced ingredients.

Organic Matter: any material that is part of or originated from living organisms; breaks down through decomposition; (*soil*) plant and animal material in various stages of decomposition; the soil biomass.

Organism: any living thing capable of growth and reproduction, such as a plant, animal, fungus, or bacteria.

Ornamental Plant: a plant grown for its decorative value; in addition to flowers, common ornamental features include leaves, fruit, stems, and bark, as well as the shape, color, or scent.

P

Packaging: the paper, metal, glass, or plastic containers or wraps used to wrap and box products before they are sold.

Palatable: sufficiently agreeable to be eaten; pleasant-tasting.

Parasite: an organism that lives in or on another organism and obtains nutrients from the host organism.

Parent Material: see *Bedrock*

Pasteurization: the process of applying heat to liquids and other food products to destroy harmful bacteria.

Pasture: a unit of grassland that has a fenced perimeter.

Pathogen: a parasite that produces disease in its host.

Pedigree: a record of the ancestry of an individual, variety, or family.

Pedology: the scientific study of soils.

Percolation: (*water cycle*) the process that occurs when gravity pulls excess water down through the soil and rock layers; (*oil extraction*) the process that occurs when oilseed flakes are sprayed with a solvent that captures the oil as the solvent passes through the flakes.

Perennial Plant: a plant that lives for more than two years. Examples: alfalfa, asparagus, rose, and daisy.

Pericarp: the protective covering that surrounds an entire seed. (*Seed Coat*)

Permeable: a substance that has the ability to let liquids pass through it.

Pest: an organism that interferes with the production of a crop or is damaging to plants, livestock, or humans.

Pesticide: a substance or mixture of substances intended for preventing, destroying, repelling, or mitigating a pest.

Petiole: a stalk that is part of the leaf system but carries out many of the functions of a stem, such as a celery stalk.

Petroleum: the crude oil that is obtained from wells drilled in the Earth; a nonrenewable natural resource.

pH: a measure of the chemical properties of a substance that describes the substance as acidic, alkaline (basic), or neutral. A pH of 7.0 is neutral (example: pure water). A pH greater than 7.0 is alkaline (examples: milk of magnesia and ammonia). A pH less than 7.0 is acidic (examples: vinegar and lemon juice). (*soil*) a measure of acidity or alkalinity based on the way the electrical charges on the surface of soil particles interact with chemical combinations in the soil mixture.

Phosphate: see *Phosphorous*

Phosphorous: an element that occurs widely in minerals, soils, untreated water, bones, teeth, and in all living cells; a nutrient required for growth and development that helps plants utilize the sun's energy for photosynthesis, grow healthy roots, and fight diseases. (*Phosphate*)

Photosynthesis: the process by which the cells containing chlorophyll in green plants and trees convert sunlight into chemical energy.

Physical Process: a series of actions, changes, or functions that affect the natural characteristics of a place.

Physiology: the organic processes or functions in an organism or in any of its parts.

Pickling: the preservation of perishable food by marinating and storing the food in an acid solution, usually vinegar.

Pioneer Crops: the first agricultural plants to be domesticated – emmer, einkorn, barley, lentil, pea, chickpea, bitter vetch, and flax.

Pinto Bean: an annual legume plant belonging to the bean family of plants, which produces oval-shaped tan seeds that are mottled with light brown patterns; the seeds develop in pods and are harvested as dried beans.

Plant Canopy: see *Canopy*

Plant Pathology: the branch of botany dealing with plant diseases.

Plant Taxonomy: the science that describes, identifies, categorizes, and names plants.

Plantation: an area planted to trees for timber (lumber) production where the trees are planted in rows, but spaced closely together to force the trees to grow tall straight trunks, minimizing the canopy.

Planter: an agricultural implement with a seed box for each row to be planted that places seeds one at a time into the soil; usually powered by and pulled behind a tractor.

Plow: an agricultural implement that cuts, lifts, and turns soil over; usually powered by and pulled behind a tractor.

Pollen: the microscopic, powder-like grains produced by the male reproductive organs of a flower.

Pollinate: to transfer pollen from an anther to the stigma of a flower.

Glossary

Pollination: the act of transferring grains of pollen from the male reproductive organ of a flower (anther) to the female reproductive organ of a flower (stigma); necessary for a plant or tree to produce seeds and reproduce.

Pollinator: an agent that moves pollen, including the wind, water, and an animal like a bee, bird, bat, butterfly, moth, or other insect.

Pollution: the result of a release of chemical or physical substances into the environment that had detrimental effects of such a nature as to endanger human health, harm living resources and ecosystems, or degrade the natural quality of the environment.

Polyunsaturated Fat: a type of unsaturated fat that provides essential fatty acids that the human body cannot make; found mostly in plant-based foods and oils.

Pomology: the science of breeding and growing fruit, especially tree fruits like apples.

Pond: a body of water less than 10 acres in size that is shallow enough to allow rooted plants to grow in the water.

Population: (*genetics*) a community of individuals that share a common gene pool.

Port: a place along a river, lake, ocean, or other water body where ships may dock, load, and unload; a harbor.

Potable: (*water*) fit for human consumption.

Potash: see *Potassium*

Potassium: a nutrient required by plants to resist disease and tolerate drought and extreme temperatures. (*Potash*)

Potato: an annual plant belonging to the nightshade family of plants that produces edible tubers underground.

Potted Plant: a plant grown in a flowerpot or container; the plant grows and remains healthy even though the container restricts its roots.

Pound: a measure of weight equal to sixteen ounces.

Prairie: a type of land dominated by grasses with scattered trees and shrubs.

Precipitation: any form of water that falls to the Earth's surface such as rain, snow, sleet, or hail.

Precision Agriculture: see *Precision Farming*

Precision Farming: an integrated agricultural management system incorporating several technologies including global positioning systems, geographical information systems, yield monitors, variable rate technology, and remote sensing. (*Precision Agriculture*)

Predator: an organism that hunts, kills, and eats other organisms.

Pressing: see *Mechanical Extraction*

Process: to change a raw material into an end product. Examples: wheat milled into flour and tomatoes processed to make ketchup.

Processor: one who changes a raw material into an end product.

Produce: (*n.*) farm or garden products, especially fruits and vegetables.

Producer: (*food web*) an organism that makes its own food like a tree or other green plant that makes food through photosynthesis; (*economic*) a person or business that makes or creates something; (*agricultural*) a farmer or rancher.

Production Agriculture: the science or occupation concerned with raising crops and livestock; farming and ranching.

Profit: the amount of money left after all expenses are subtracted from the total amount received; the amount of income left after all expenses have been paid.

Propagate: to reproduce an organism like a plant or animal or cause one to reproduce; to create new plants.

Protein: a nutrient formed by various combinations of different amino acids that strengthens, maintains, and replaces tissues in the body.

Pruning: the selective removal of plant parts.

Public Land: land that is owned by U.S. citizens and is administered and managed by the local, state, or federal government.

Public Water Supply: water used for drinking and other purposes that is supplied to many people by a system operated by a city, public wholesale water supply district, or rural water district.

Pumpkin: an annual plant belonging to the gourd family of plants that produces round, orange edible fruit on trailing vines.

R

Rancid: having a strong disagreeable smell or taste caused by decomposing fats or oils.

Rangeland: land on which the native vegetation is predominately grasses, grass-like plants, forbs, or shrubs; most suitable for grazing.

Ration: the amount of food for an animal for one day, usually a mixture of feeds formulated to meet the specific nutritional and energy requirements of that animal.

Raw Material: a natural unprocessed material before any processing or refining has taken place.

Reap: to cut and gather a crop.

Refined Grain: a product that does not contain the whole kernel of grain because the bran and germ were removed during milling.

Refrigeration: a temporary food preservation method that keeps food in temperatures below 40 degrees Fahrenheit, inhibiting the growth and reproduction of microorganisms.

Regenerate: to renew through either natural means (seeded on the site from adjacent plants or trees or by seeds deposited by wind, birds, or animals) or by planting seedlings or seeds into the soil.

Renewable Resource: a resource that can be replaced or regenerated through natural processes; a resource that can be grown like plants or wood or derived from weather or nature like wind or solar energy.

Reservoir: a natural or artificial place to store water; sometimes created by a dam.

Residue: plant material, such as stalks, leaves, or straw, left on a field after the crop has been harvested.

Resistant: not damaged by something; able to restrict the development of a pathogen or parasite.

Retailer: a person or business who sells products or goods directly to consumers in small amounts.

Rhizome: an underground stem that is horizontal and produces roots at the joints of the stem.

Rice: a semiaquatic cereal grain belonging to the grass family of plants that is typically grown as an annual plant with seedlings that grow while submerged in water; the second most widely consumed cereal grain in the world.

River: often used to describe a larger stream with many tributaries.

RNA: Ribo Nucleic Acid; a nucleic acid that is similar to DNA in composition but is derived from the DNA code and is single-stranded; delivers genetic information from the nucleus to the rest of the cell and provides the code to manufacture proteins.

Rodenticide: a pesticide that controls rodents, like mice or rats.

Root: the underground portion of a plant that draws food and water from the soil, stores plant food, and anchors a plant in place.

Root Hairs: the tiny structures that grow from a plant's roots and help absorb water and nutrients from the soil for the plant to use.

Root System: the portion of a plant containing the root organs.

Root Tuber: an enlarged root that remains attached to the main plant and stores food for the plant. Examples: sweet potato and radish.

Root Zone: the area and volume of soil around a plant in which roots are normally found.

Rootstock: any underground stem that will take root at the joints of the stem; (*grafting*) a bit of a tree trunk or plant stem with some roots still attached.

Roughage: a type of animal feed that is high in fiber and has nutrients that are not easily digested, such as grass or hay.

Row Crop: a term originally used to describe a crop planted in a specific way; includes soybean, corn, grain sorghum, sunflower, and cotton.

Ruminant: an animal that has a digestive system containing a four compartment stomach that is able to digest grasses that humans cannot, like cattle, bison, sheep, and goats.

Runoff: any rain, ice, or snow that does not soak into the soil, but flows across the land and eventually runs into streams and rivers when the intensity or volume of that precipitation exceeds the absorption and storage capacity of the land's surface.

S

Salmonella: a group of bacteria that can pass from the fecal material of people and animals to other people and animals, causing diarrheal illness in people.

Sand: the largest of the mineral particles that make up soil; can be seen without magnification.

Saturated Fat: a type of fat that retains a more solid form at room temperature; found mainly in animal sources of food.

Sawlog: a section of a tree large enough to be processed at a sawmill and cut into lumber.

Scallion: an onion that is harvested before it has developed into a bulb.

Section: (*real estate*) one square mile of land; 640 acres of land.

Sediment: any solid organic or mineral particles such as sand, clay, or silt that are deposited in a new location by wind, water, or ice.

Seed: the part of a plant that contains the embryo, which can grow into a new plant.

Seed Bank: a collection of seeds from plants; a collection of seeds stored for conservation or research purposes.

Seed Coat: see *Pericarp*

Self-pollination: the transfer of pollen between the male and female reproductive organs of a single flower or between flowers on the same plant.

Semi-arid Steppe Climate: a climate type characterized by hot – often very hot – summers, cool to cold winters, and variable precipitation, often less than the amount of water lost through evapotranspiration.

Semi-truck: a large truck for pulling heavy loads that combines a towing unit called a "tractor" with one or more large trailers.

Sequencing: the scientific process of determining the exact order (sequence) of the molecules along a strand of DNA.

Serving: a single helping or portion of food.

Serving Size: the recommended portion of food to be eaten; (*label*) the portion of food used as a reference on the nutrition facts label of that food based on – but not necessarily equal to – the amount of food customarily eaten at one time, as reported from nationwide food consumption surveys.

Sheath: the lower part of a leaf that fits around the stem of a plant.

Sheaf: a bundle of cut plants bound together, most commonly stalks of grain with the seed heads still attached.

Glossary

Shelling: the process of removing kernels of corn from the corn cob. (*other plants*) see *Dehulling*.

Shelterbelt: see *Windbreak*

Shock: a bundle of sheaves set upright in a field, usually to assist with drying.

Shoot: the new plant growth that pushes through the soil surface, elongates, and develops into a stem once it emerges from the soil.

Silage: a sweet tasting, easily digestible livestock feed resulting from chopping entire corn or sorghum plants into small pieces and storing those in an area where they are packed tightly so that the green plant material will ensile or ferment.

Silo: an upright storage bin shaped like a cylinder.

Silt: the small powdery mineral particles that make up soil but cannot be seen without magnification.

Simple Carbohydrate: a carbohydrate that is digested and converted to glucose quickly; usually tastes sweet.

Simple Leaf: an undivided leaf; may have indentations but those indentations do not reach the center vein of the leaf.

Simple Machine: one of six machines: a level, inclined plane, wedge, screw, wheel and axle, or pulley.

Slip: a new plant grown from starter roots saved from the previous year's harvest, gently separated from the starter root, and transplanted once it sprouts and develop its own root system.

Small Grains: a crop category that includes wheat, oats, barley, triticale, rye, and rice.

Sod: an area of soil with growing grass and roots; squares or strips (rolls) of turfgrass cut from a production field with a thin layer of soil still attached.

Softwoods: the tree category containing conifers and needle-leaved trees, like the evergreen or pine.

Soil: the naturally occurring mixture of minerals, organic matter, water, and air that forms the surface of the Earth.

Soil Fertility: the ability of the soil to supply mineral nutrients to plants.

Soil Food Web: the community of organisms living all or part of their lives in the soil, converting energy and nutrients as one organism consumes another; all plants depend on the soil food web for nutrients.

Soil Horizon: a specific layer in the soil that has physical characteristics that differ from those of the layers above and beneath this layer.

Soil Order: a system of classifying soils using 12 categories.

Solvent Extraction: a process for removing oil from oilseeds that involves percolating a solvent through flaked oilseeds and then separating and collecting the oil from the oil-solvent solution; particularly useful for removing oil from oilseeds with a low oil content (less than 20 percent). (*Chemical Extraction*)

Soy Oil: see *Soybean Oil*

Soybean: an annual plant belonging to the bean family of plants that is a legume, grows in a bushy shape, and produces an edible bean but is categorized as an oilseed.

Soybean Oil: the oil extracted from a soybean; soybean oil is the most widely used vegetable oil in the world. (*Soy Oil*)

Specialty Crop: a category of agricultural crops that includes horticultural crops, dried fruits, tree nuts, herbs and spices, medicinal plants, Christmas trees, turfgrass, and other nursery crops.

Species: an identifiable group of individuals that do not share the exact same characteristics of any other identified group of individuals.

Spike: a long inflorescence (flowering part of a plant) attached directly to a stem with the newest flowers at the tip.

Spikelet: a small self-pollinating flower spike; the basic unit of the flower cluster of a grass plant.

Spore: a very small, usually one-celled, structure that is capable of reproduction without sexual activity; produced by organisms like bacteria, fungi, algae, and seedless plants.

Spray Drying: a food preservation method that involves atomizing a liquid in a heated chamber to quickly dry it into a particulate (powder) form, which can easily be brought back to its original state by adding water or other liquids. Examples: powdered cheese (found in many macaroni and cheese products) and powdered milk.

Spring Oat: a type of oat that is planted in early spring and harvested in early summer; the most common type of oat grown in Kansas and the United States.

Spring Crop: a crop that is planted in the spring and harvested during late summer or fall.

Sprout: (*n.*) new growth on a plant; the edible shoot of a newly sprouted seed or bean, like an alfalfa sprout; (*v.*) to begin growing.

Stacking Traits: to combine multiple desired traits into a single seed or plant.

Stand: a community of plants sufficiently uniform in species, age, arrangement, or condition to be distinguishable as a group from other plants growing in the area.

Starch: a complex carbohydrate; plants store energy in the form of starch.

Steel: any of various hard, strong, flexible alloys of iron and carbon; widely used in many kinds of tools and as a structural material in construction.

Steep: to soak in water or other liquids in order to clean, soften, or extract something; the first step in the wet milling process that extracts corn oil from kernels of corn.

Stem: a tube-like structure that a plant uses to move water and food from place to place; also used to display the leaves, flowers, and fruit of the plant.

Stem Tuber: a tuber, like a potato, with the typical cell structure of any stem; usually forms an oblong rounded shape that grows vertically with vegetative buds on the top and fibrous roots on the underside.

Stewardship: the concept of responsible caretaking based on the premise that people are managers of natural resources and are responsible to future generations for their condition.

Stigma: the female reproductive organ of a flower.

Stolon: a long stem or shoot that droops to the ground and may root and form new plants where it touches the soil.

Stomate: a microscopic opening on the outermost layer of cells covering parts of a plant that have contact with the air, occurring most abundantly on the undersides of leaves; the opening where carbon dioxide enters the cells of the plant and where water vapor and oxygen escape the cells and enter the atmosphere. (*pl. – Stomata*)

Stone Fruit: a type of fruit that has an outer fleshy part surrounding one hard pit or stone with a single seed inside, like a peach, cherry, plum, apricot, or olive.

Straw: the stalks of threshed cereal grains like wheat; the dried stalks of a cereal grain or grass.

Stream: a body of water confined within two banks and a bed that provides a physical path for flowing water through a channel.

Streambank: the sloping ground that borders a stream and confines the water in the natural channel when the water level is normal.

Strip Cropping: the practice of growing two or more crops in alternating strips along contours, often perpendicular to the prevailing direction of the wind or surface water flow.

Strip Till: a method of tilling and planting in narrow rows or strips (six to eight inches wide) so that the soil and crop residue can be left undisturbed in-between rows. (*Zone Tillage*)

Subsoil: the layer of soil beneath the topsoil.

Sudangrass: a fine-stemmed leafy type of sorghum used as an annual summer forage; regrows rapidly and may be harvested multiple times in a single growing season.

Summer Fallow: the practice of leaving land unplanted during at least one period when a crop would normally be grown in order to control weeds and store water or other plant nutrients in the soil. (*Ecofallow*)

Sunflower: an annual plant belonging to the aster or daisy family of plants that is native to Central America; the official state flower of the state of Kansas. Cultivated sunflowers produce a single stalk with one large flowering head that fills with seeds.

Surface Water: the water that flows across the surface of the land or is stored in a river, lake, or freshwater wetland.

Sustainable: any farming practice that reduces inputs while maintaining production or that generates more production while holding inputs constant; also used as a marketing term.

Sweet Potato: a perennial plant belonging to the morning glory family of plants with rapid growing vines that produce yellow or orange tubers with ends that taper to points; grown as an annual plant in the United States because the plants do not tolerate frost and are sensitive to drought.

Sweet Sorghum: a type of sorghum that produces sweet juicy stems; used to make syrup and molasses.

T

Table Grape: a grape intended for consumption while it is fresh.

Tame Pasture: any land intentionally planted for grazing, usually seeded to perennial grasses or legumes, such as clover or timothy.

Taproot: a thick root often growing directly from the stem; usually has few or no branch roots. Soybeans, sunflowers, and carrots have taproots.

Taxonomy: the method by which living things are classified and organized to understand the relationships between them.

Tempering: the process of using steam to increase the temperature and moisture content of grains and oilseeds to improve flaking performance and efficiency of oil extraction. (*Conditioning*)

Terminal Elevator: historically, a larger grain elevator that collected grain from many country houses before selling and shipping the grain to an export elevator or a processor. Today, these larger grain elevators typically receive grain by truck and ship grain by rail or truck directly to flour mills and other processing facilities.

Terrace: a raised, generally horizontal, ridge of soil embankments, constructed across a slope following the contour of the land.

Thermal Processing: the preservation of food by using heat over a pre-determined length of time; includes canning and pasteurization.

Thinning: the process of removing excess and poor quality plants or trees from a stand for the purpose of improving the growth and value of the remaining plants or trees.

Thresh: to harvest by separating the seeds from plant stalks (straw), chaff, and other plant material.

Tillage: the preparation of land for crop production; often refers to mechanical manipulation of the soil in order to manage crop residues or weeds, incorporate nutrients or plant protection products, or combine those actions.

Glossary

Tillage Operation: an act of preparing land for crop production.

Tiller: a secondary shoot that develops to the side of a plant's main stem; develops from the plant's root system and may develop into a stem with a seed head.

Timber: an uncut tree or log suitable for producing wood for commercial industrial uses.

Timber Culture Act of 1873: the federal law that provided free land to settlers if 40 acres of a homestead claim was planted to trees and kept in growing condition for 10 years (later reduced to 10 acres).

Timberland: a forested area capable of producing wood for commercial industrial uses.

Toasting: (*oil extraction*) the process of heating seed residue to vaporize any remaining solvent during the chemical extraction of oil.

Tofu: the soybean curd; made by curdling soy milk, straining off the liquid, and pressing the remaining gel-like curds into soft, white blocks.

Tonnage: the number of tons of plant material produced and removed per acre.

Topography: the features on the surface of the land, including natural features like mountains or rivers and manmade features like roads.

Topsoil: the layer of soil at the Earth's surface.

Total Maximum Daily Load (TMDL): the maximum amount of pollution that a water body can receive without violating government standards.

Township: a measure of land established by Congress when it created a uniform way of dividing land – a square area of land, six miles by six miles (an area of 36 square miles) divided into one-mile squares called sections.

Tractor: a self-propelled machine that furnishes power to pull and operate an agricultural implement like a grain drill or planter; the towing unit of a semi-truck.

Trade: the activity of buying and selling or exchanging one item for another.

Trait: a genetically determined characteristic.

Trans Fat: a fat created during the process of hydrogenation.

Transgenic: a term that describes the insertion of a gene from any species into the genetic code of the same or a different species.

Transesterification: the chemical reaction of a fat or oil with an alcohol that separates the fat or oil into methyl esters and glycerin; used to convert vegetable oil, animal oil and fat, and waste cooking oil into biodiesel.

Transpiration: the process by which water is pulled from the soil into the roots of a plant, up through the cells of the plant, and eventually out into the atmosphere through tiny openings in the plant's leaves.

Tree: a woody plant that usually grows to more than 12 feet tall and has one main stem.

Tree Farm: a privately owned woodland where sustainable forest management is the primary objective, usually deliberately planted to trees for timber or Christmas trees.

Tree Nut: a hard-shelled dried fruit or seed that grows on a tree and has a separate rind or shell and an edible kernel, like a pecan, walnut, cashew, pistachio, or almond.

Tree Plantation: a site planted to trees, often a single species, that are maintained at about the same age and size and are harvested all at once and then replanted.

Tributary: a stream that flows into a larger stream or other body of water.

Triticale: a hybrid small grain plant produced by crossbreeding wheat and rye plants; an annual self-pollinating plant that is similar in appearance to wheat; used as a forage crop and feed grain.

Tuber: a swollen underground part of a plant that stores food.

Turf: a soil covering of mowed vegetation, usually a turfgrass.

Turfgrass: a species or cultivar of grass that is maintained at a desired height through regular mowing

U

Unadulterated: pure; not mixed or diluted with something else.

Unsaturated Fat: a fat that stays liquid at room temperature.

Upland Cotton: a type of cotton native to Mexico and Central America that produces fibers ranging in length from 7/8 to 1 5/16 inches and has white or cream-colored petals that briefly turn pink after pollination; the type of cotton grown in Kansas and most of the United States. (*American Upland Cotton*)

V

Value-added Product: a product whose value has been increased, especially by processing, manufacturing, or marketing.

Variety: a specific group of individual plants within a species that are genetically distinct from similar groups of individual plants of the same species; a subdivision of a species.

Variety Demonstration Plot: see *Demonstration Plot*

Vascular Plant: a plant like wheat and corn that absorbs water and nutrients through its roots.

Vat Pasteurization: a pasteurization method where a single container is used to heat liquids to the desired temperature; used to process smaller quantities of liquids and other food products. (*Batch Pasteurization*)

Vegetable: a generally accepted term for a plant cultivated for an edible plant part. There is no scientific or botanical definition of the term, only cultural and culinary definitions that vary from country to country.

Vegetable Oil: a generic term for the oil obtained from oilseeds; oil made from a single ingredient or a blend of several oils from plant sources.

Vegetation: the mass of plants that covers a given area.

Veneer: a thin slice of wood, usually less than one-eighth inch thick, that typically is glued onto core panels of less expensive wood.

Veneer Log: a high-value log harvested from a hardwood such as cherry, red oak, white oak, walnut, birch, or sugar maple.

Viniculture: the science, production, and study of grapes used for winemaking.

Vitamin: an organic substance necessary for normal body growth, development, and metabolism.

Viticulture: the science, production, and study of grapes.

W

Waste: an object or material for which no use or reuse is intended; often produced as the result of processing or manufacturing.

Water: a colorless, odorless, transparent liquid consisting of two parts hydrogen and one part oxygen; H₂O; also known as hydrogen hydroxide or dihydrogen monoxide.

Water Cycle: see *Hydrologic Cycle*

Water Quality: the physical, chemical, and biological characteristics of water and how those characteristics relate to a particular use of that water.

Weather: the state of the atmosphere for a specific site at a specific point in time.

Weathering: the process of breaking rock and mineral particles into simpler particles, including changes altering color, texture, composition, or form due to chemical and physical forces.

Well: a vertical excavation into an underground rock formation.

Wet Milling: the process used to extract corn oil from the germ of the corn kernel, which involves steeping the corn in a mild acidic solution, coarsely grinding the corn, and separating out the lighter-weight germ so that the oil can be extracted from the germ.

Wetland: a geographic area that is frequently inundated with water and is characterized by plants adapted to grow in water, soils that contain little or no oxygen, and some saturation or flooding during the growing season.

Wetlands Reserve Program: a voluntary program administered by the U.S. Department of Agriculture that provides technical and financial assistance to landowners to address wetlands, wildlife habitat, soil, water, and related natural resource concerns.

Wheat: an annual plant belonging to the grass family of plants; a cereal grain plant that can produce many stems, each of which may develop a seed head at the tip.

Whole Grain: a grain product that contains the entire kernel in nearly the same relative proportions of bran, germ, and endosperm as the original grain, even if the kernels have been cracked, crushed, or flaked.

Wholesome: something that is healthy; free from injury, disease, or illness.

Windbreak: a line of trees or shrubs planted at regular intervals, perpendicular to the prevailing winds, and designed to reduce wind velocities, thus reducing wind erosion. (*Shelterbelt*)

Winnow: to separate grain from the chaff, typically by using air to blow away the lighter chaff.

Winter Barley: a type of barley that is planted, sprouts, and begins growing in the fall, goes dormant during the winter, and is harvested the following spring or summer; requires cold weather to produce a head that fills with grain.

Winter Wheat: a type of wheat that is planted, sprouts, and begins growing in the fall, goes dormant during the winter, and is harvested the following summer; requires cold weather to produce a head that fills with grain.

Woody Plant: a perennial plant with above ground stems that resemble wood in appearance, texture, or toughness, such as a tree, shrub, vine, cactus, or yucca.

Y

Yam: the edible tuber of a perennial flowering tropical vine belonging to the yam family of plants that is generally sweeter and larger than a sweet potato; closely related to lilies and grasses but not botanically related to the sweet potato although the U.S. Department of Agriculture allows sweet potatoes to be labeled as yams if accompanied by the words "sweet potato."

Yield: the amount of a specified substance produced per unit area.

Yield Monitor: a yield measuring device installed on harvesting equipment.

Z

Zone Village: see *Strip Till*