Glossary

A

abdominal cavity The largest body cavity in humans and many animals and holds the bulk of the viscera.

abnormal behavior Vices; not normal for the species.

abomasum Fourth stomach compartment of ruminant animals that corresponds to the true stomach of monogastric animals.

abortion Unexpected delivery of fetus between conception and a few days before normal parturition.

abscess Localized collection of pus in a cavity formed by disintegration of tissues.

absorb Take in or soak up (energy, or a liquid or other substance) by chemical or physical action, typically gradually.

absorptive cells The single layer of epithelial cells lining the surface of the small intestine selectively absorbs food molecules from the gut into the bloodstream.

accessory sex glands The seminal vesicles, prostate and Cowper's glands in the male. These glands add their secretions to the sperm to form semen.

acclimation Preparation of the new plant for existence outside of the culture.

Acid Detergent Fiber (ADF) Least digestible plant components, including cellulose and lignin.

acidic Properties of an acid; having a pH below 7.

acquired immunity Associated with the presence of antibodies from another immune animal or from exposure to the disease.

acre-feet A unit of volume equal to the volume of a sheet of water one acre (0.405 hectare) in area and one foot (30.48 cm) in depth; 43,560 cubic feet (1233.5 cu m).

actinomycete An order of microbes common to soil; are bacteria but resemble fungi in having mycelium. Important decomposers.

active immunity Acquired through direct contact with the specific disease-causing organism that causes the body to develop antibodies to combat invasion.

acute Relatively sudden appearance of symptoms (within 24 hours).

adenosine triphosphate (ATP) Molecule involved in the “energy currency” of the cell; energy is released when a phosphate group is broken off forming ADP (adenosine diphosphate).

adhesion Force of attraction between two different substances.

adipocyte A single fat cell.

adipose tissue Fat cells or fat tissue.

adjuvant Herbicide performance enhancer

adobe A kind of clay used as a building material, typically in the form of sun-dried bricks.

adsorption The attraction of ions or compounds to the surface of a solid. Soil colloids adsorb large amounts of ions and water.

aeration The process by which air in the soil is replaced by air from the atmosphere.

aerobic An adjective applied to organisms that grow, or processes that occur, in the presence of oxygen.

aeroponics Roots are hung in the air and sprayed with nutrient solution.

aflatoxin Highly poisonous substance produced by fungi in grain.

afterbirth The membranes attached to the fetus that are expelled after parturition.

aggregate A material or structure formed from a loosely compacted mass of fragments or particles.

aggregate culture Growing in sand, gravel, marbles.

aggregate fruit Developed from a single flower with many ovaries.

aggregation Mixture of first or primary soil particles into compound particles.

agnostic behavior Includes fighting or flight and other reactions involving conflict.

agriculture the science or practice of farming, including cultivation of the soil for the growing of crops and the feeding, breeding and raising of animals to provide food, fiber and other products.

agronomy The theory and practice of field-crop production and soil management; the scientific management of land.

AI See artificial insemination.

air dry Refers to feeds in equilibrium with air; they would contain approximately 10% water or 90% dry matter.

albumen The white of an egg.

Alfisols One of twelve soil orders. A mineral soil, usually formed under forest, common to northern and Midwestern states.

algal bloom A population explosion of algae in surface waters such as lakes and streams, often resulting in high turbidity and green-or red-colored water, and commonly stimulated by nutrient enrichment with phosphorus and nitrogen.

alimentary canal Passageway for food and waste products through the body.

alkaline soil Any soil that has pH > 7.

alleles Genes occupying corresponding loci in homologous chromosomes that affect the same hereditary trait but in different ways.

allelomimetic behavior Doing the same thing. Animals tend to follow the actions of other animals.

allelopathy The chemical inhibition of one plant (or other organism) by another, due to the release into the environment of substances acting as germination or growth inhibitors.

allopatric species Related species which cannot interbreed because of geographical separation.

alluvial soils Soils deposited by running water and are often located in existing floodplains.

alveolus (plural alveoli) A hollow cluster of cells. In the mammary gland, these cells secret milk.

amendment, soil Any substance other than fertilizers, such as lime, sulfur, gypsum, and sawdust, used to alter the chemical or physical properties of a soil, generally to make it more productive.

amino acid A simple organic compound containing both a carboxyl (—COOH) and an amino ($—NH_2$) group.

amnion A fluid-filled membrane located next to the fetus.

ampulla The dilated or enlarged upper portion of the vas deferens in bulls, bucks and rams, where sperm are stored for sudden release at ejaculation.

anabolic A constructive, or "building up," metabolic process.

anaerobic Living or functioning in the absence of air or free oxygen.

analogous Comparable to.

anaphase Mitosis continuing, where pairs of identical chromosomes separate from each other.

anatomy Science of animal body structure and the relation of the body parts.

anchorage Function of soil to hold a plant firmly in place.

Andisols Soil order with volcanic parent materials.

androgen A male sex hormone, such as testosterone.

anemia Deficiency of hemoglobin, often accompanied by a reduced number of red blood cells. Usually results from an iron deficiency.

anestrous Period of time when female is not in estrus; the nonbreeding season.

animal rights Rights believed to belong to animals to live free from use in medical research, hunting and other services to humans.

animal welfare Physical and psychological well-being of animals.

anion exchange capacity The sum total of exchangeable anions that a soil can adsorb.

anion Negatively charged ion; during electrolysis it is attracted to the positively charged anode.

annuals Complete life/growing cycle in less than one year and must be planted again.

antemortem Before death.

anterior Situated in front of, or toward the front part of, a point of reference; toward the head of an animal.

anterior pituitary The part of the pituitary gland, located at the base of the brain, that produces several hormones.

anthelmintic A drug or chemical agent used to kill or remove internal parasites.

anther Holds pollen sacs.

anthropomorphism Attributing human characteristics to animals.

antibiotic A product produced by living organisms, such as yeast, which destroys or inhibits the growth of other microorganisms, especially bacteria.

antibody A specific protein molecule that is produced in response to a foreign protein (antigen) that has been introduced into the body.

antigen A foreign substance that, when introduced into the blood or tissues, causes the formation of antibodies. Antigens may be toxins or native proteins.

anti-inflammatory An agent that acts to decrease inflammation and associated pain, heat, and swelling.

antiseptic A chemical agent used on living tissue to control the growth and development of microorganisms.

antiserum A serum which helps an animal's body fight a virus until the animal's system makes its own antibodies.

antitoxin An antibody that is capable of neutralizing poisons from animal and vegetable sources.

antitranspirants Compounds that slow transpiration by plants to reduce water loss.

apex Tip of the leaf.

appendicular skeleton Includes the four legs, used for locomotion and connects with the axial skeleton by muscles.

aquaculture Raising of aquatic animals or the cultivation of aquatic plants for food.

aquaponics plants grown in water containing dissolved nutrients, often in combination with fish culture.

aquifer Underground formation that holds water.

arable land Suitable for the production of cultivated crops.

arid climate Low precipitation region where evapotranspiration exceeds precipitation.

Aridisols One of the twelve soil orders. Common to arid regions. Soil is dry and low in organic matter.

ARS Agricultural Research Service

artery Vessel through which blood passes from the heart to all parts of the body.

arthropod Invertebrate animal with an exoskeleton, jointed appendages and a segmented body; usually having a hard shell.

artificial insemination (AI) The introduction of semen into the female reproductive tract (usually the cervix or uterus) by a technique other than natural service.

artificial vagina A device used to collect semen from a male when he mounts in a normal manner to copulate. The male ejaculates into this device, which simulates the vagina of the female in pressure, temperature, and sensation to the penis.

as fed Refers to feeds that contain their normal amount of moisture.

ascaris Any of the genus (*Ascaris*) of parasitic roundworms.

asexual Without sexual means.

aspirate Pull back on the syringe plunger to be sure the needle is not in a blood vessel.

assimilation Process of transforming food into living tissue.

ATP Adenosine triphosphate, a fully charged energy unit.

atrophy Shrinking or wasting away of a tissue or organ.

autopsy A postmortem examination in which the body is dissected to deter mine the cause of death.

autotroph An organism that is able to form nutritional organic substances from simple inorganic substances such as carbon dioxide.

autotrophic Plants having the ability to "produce" their own energy directly, being self-sufficient.

available nutrient That portion of any element or compound in the soil that can be readily absorbed and assimilated by growing plants.

available water (AW) Water, readily absorbed by plant roots. The amount of water released between the field capacity and the permanent wilting point.

avian Refers to birds, including poultry.

axial skeleton Includes the skull and spinal column.

axion Elongated fiber of the nerve.

B

bacteria Microscopic, single-celled organisms.

Bacterial crude protein (BCP) Protein supplied to an animal by rumen microbes.

bactericides May inhibit bacterial multiplication, or cause their death.

bacterin A suspension of killed or attenuated bacteria for use as a vaccine.

bagasse Fiber of the cane plant after crushing and extraction.

balance sheet A statement of assets owned and liabilities owed in dollar terms that shows the equity or net worth at a specific point in time (e.g., net worth statement).

balanced ration Contains more than one feed, so proper quantities of essential nutrients will be provided.

balling gun Administers large pills for dosing animals.

band (1) A relatively large group of range sheep; (2) method of identification (e.g., put a band around the leg of a chicken).

banding Material applied in a row.

barren Not capable of producing offspring.

barrow A male swine that was castrated before reaching puberty.

basal metabolism The chemical changes that occur in an animal's body when the animal is in a thermoneutral environment, resting, and in a post-absorptive state. It is usually determined by measuring oxygen consumption and carbon dioxide production.

base Bottom of the leaf and attaches to the petiole.

base pair Two nitrogenous bases (adenine and thymine or guanine and cytosine) held together by weak bonds. Two strands of DNA are held together in the shape of a double helix by the bonds between base pairs.

base saturation Percentage of the cation exchange sites filled with exchangeable bases percentage.

basic Alkaline readings between 7 and 14 on the pH scale.

beef The meat from cattle (bovine species) other than calves (the meat from calves is called **veal).**

beneficial insects Help man by pollinating, providing food and other helpful materials.

beriberi A disease caused by a deficiency of vitamin $B_{1.}$

best management practices (BMP) Making the most efficient use of animal manures without inflicting damage on the environment.

biennials complete growing cycle in two growing seasons, not necessarily two years but more than one year.

bilateral symmetry The body is divided into equivalent right and left halves by only one plane.

binomial nomenclature A formal system of naming species of living things by giving each a name composed of two parts, both of which use Latin grammatical forms.

biodegradable Subject to degradation by biochemical processes.

bioinformatics Study of the inherent structure of biological information and biological systems.

biologicals Medicinal products used primarily to prevent disease, including serums, vaccines, antigens, and antitoxins.

biopores Soil-sediment pores produced by habitat

bioremediation The use of living things to reduce pollution.

biosecurity Procedures intended to protect animals against disease or harmful biological agents).

biosolid The primary organic solid production yielded by municipal waste-water treatment that can be beneficially recycled.

bioswales Landscape elements designed to remove silt and pollution from surface runoff water.

biotechnology The use of microorganisms, plant cells, animal cells, or parts of cells (such as enzymes) to produce industrially important products or processes.

biplane Early type of aircraft with two pairs of wings, one above the other.

blackstrap molasses Syrup that remains after as much sugar as possible has been extracted from sugar cane.

blade Main body of a leaf.

blemish Any defect or injury that mars the appearance of, but does not impair the usefulness of, an animal.

blight Disease or injury of plants marked by the formation of lesions, withering and death of parts.

bloat An abnormal condition in ruminants characterized by a distention of the rumen, usually seen on an animal's upper left side, owing to an accumulation of gases.

blood spots Spots in the egg caused by a rupture of one or more blood vessels in the yolk follicle at the time of ovulation.

boar A male swine of breeding age.

bog spavin A soft enlargement of the anterior, inner aspect of the hock.

boll Fruit of the plant.

bolus (1) Regurgitated food; (2) a large pill for dosing animals.

bone spavin A bony (hard) enlargement of the inner aspect of the hock.

border Irrigation used where the land is level.

bots Any of a number of related flies whose larvae are parasitic in horses and sheep.

bovine A general family grouping of cattle.

break joint Denotes the point on a lamb carcass where the foot and pastern are removed at the cartilaginous junction of the front leg.

bred Female has been mated to the male. Usually implies the female is pregnant.

breech A presentation at birth is where the rear portion of the fetus is presented first.

breed Animals of common origin with characteristics that distinguish them from other groups within the same species.

breeder A person who breeds livestock, racehorses, other animals, or plants.

breeding value A genetic measure for one trait of an animal, calculated by combining into one number several performance values that have been accumulated on the animal and the animal's relatives.

British thermal unit (Btu) The quantity of heat required to raise the temperature of 1 lb of water 1°F or near 39.2°F.

broadcast Material distributed uniformly over the field.

broad-leafed Having a net-like pattern of veins in the leaves.

broiler A young meat-type chicken of either sex (usually 6 to 8 weeks of age) weighing 3 to 5 lb. Also referred to as a fryer or young chicken.

brood Mother

brooder Fish that have reached reproductive maturity.

broodiness The desire of a female bird to sit on eggs (incubate).

Brownfields Abandoned, idled or underused industrial or commercial facilities where expansion or redevelopment is complicated by real or perceived contamination.

browse Woody or brushy plants. Livestock feed on tender shoots or twigs.

brucellosis A contagious bacterial disease that results in abortions; also called Bang's disease.

BST (Bovine Somatotropin) Growth hormone produced from pituitary gland of cattle.

buck A male sheep or goat. This term usually denotes animals of breeding age.

budding A bud with bark is removed from the desired plant and placed on the rootstock.

buffer strips Tall crops standing at right angles to the prevailing winter wind.

buffered Resists pH change. Also buffering.

bulbourethral (Cowper's) gland An accessory gland of the male that secretes a fluid which constitutes a portion of the semen.

bulk density Refers to the weight of the oven-dry (moisture removed) soil with its natural structural arrangement.

bull A bovine male. The term usually denotes animals of breeding age.

burned lime Made by heating limestone. Heating drives off carbon dioxide resulting in the lighter calcium oxide:

by-product A product of considerably less value than the major product. For example, in U.S. meat animals, the hide, pelt and offal are by-products, whereas meat is the major product.

byproduct An incidental or secondary product made in the manufacture or synthesis of something else.

C

C:N Ratio The measure of carbon to nitrogen.

CAFOs Confined Animal Feeding Operations

calcareous soils High in calcium carbonate usually derived from limestone-rich parent materials.

calcification Normally occurs in the formation of bone, but calcium can be deposited abnormally in soft tissue, causing it to harden.

calcitic limestone Nearly pure calcite or calcium carbonate.

calcium carbonate equivalent A measure of potential acidity of basicity.

calf A young male or female bovine animal under 1 year of age.

calibrate Mark with a gauge or instrument with a standard scale of readings.

callus First form of growth of a tissue culture.

calorie The amount of heat required to raise the temperature of 1 g of water from 15°C to 16°C.

calve In cattle, giving birth; same as parturition.

calving interval Amount of time (days or months) between the birth of a calf and the birth of a subsequent calf, both from the same cow.

cambium Provides diameter growth in the stem.

candling Shining of a bright light through an egg to see if it contains a live embryo.

canter A slow, easy gallop.

capacitation One of the last steps in the maturation of mammalian spermatozoa and is required to render them competent to fertilize an oocyte (egg).

capillary rise Water moving upward in the soil as surface layers dry, moving from areas of high potential to areas of low potential.

capillary water Held by cohesive forces greater than gravity, is used by plants and moves freely in the soil.

capon Castrated male chicken. Castration usually occurs between 3 and 4 weeks of age.

carbohydrates Any foods, including starches, sugars, celluloses and gums, that are broken down to simple sugars through digestion.

carbon cycle Plant nutrients tied up in the bodies of plants and animals are released which recycles carbon and nutrients.

cardiac Pertaining to the heart.

carnivores Animals that feed on flesh.

carotene The orange pigment found in carrots, leafy plants, yellow corn and other feeds, which can be broken down to form two molecules of vitamin A.

carotenoids Natural pigments found in plants and animals.

carrying capacity Number of people, other living organisms, or crops that a region can support without environmental degradation.

casein Major protein of milk.

cash-flow statement A financial statement summarizing all cash receipts and disbursements over the period of time covered by the statement.

cast A cylindrical mass of earth voided by an earthworm.

castration To remove the testicles.

catalysts A substance that increases the rate of a chemical reaction without itself undergoing any permanent chemical change.

cation A positively charged ion; during electrolysis it is attracted to the negatively charged cathode.

cation exchange capacity The sum total of exchangeable cations that a soil can adsorb.

catkin Slim, cylindrical flower cluster, with inconspicuous or no petals, usually wind-pollinated.

caudal At or near the tail or the posterior part of the body.

cecal fermenters Digest nutrients by means of the cecum rather than by a multi-chambered stomach such as the rabbit and horse.

cecum (ceca) Large, sock-shaped pouch between the horse's small and large intestines; important in cellulose digestion.

cell A specific, separate mass of living material that is surrounded by a semi-permeable membrane.

cell Basic structural and physiological unit of crop plants, within which chemical reactions of life occur providing metabolites for plant life and for human use.

cell plate Forms the wall between the two new daughter cells in a dividing cell.

cell wall (not membrane) Composed of two layers which provide support and protection for the cell.

cellulose An insoluble substance that is the main constituent of plant cell walls and of vegetable fibers such as cotton.

centriole See centrosome

centrosome Near the nucleus and functions in cell division.

cervix Portion of the female reproductive tract between the vagina and the uterus. It is usually sealed by thick mucus except when the female is in estrus or delivering young.

cesarean section Delivery of fetus through an incision in abdominal and uterine walls. (See c-section)

check Area bounded by levees [an embankment] running down slope.

chelate Water-soluble trace element fertilizers.

chemical A compound or substance that has been purified or prepared, especially artificially.

chemical weathering Changes the chemical makeup of rock, breaking it down, mostly with water.

chevon Meat from goats.

chick A young chicken that has recently been hatched.

chisel plowing Pulls long, curved teeth through the soil to loosen it without turning it over.

chlorophyll A green pigment, present in all green plants and in cyanobacteria, responsible for the absorption of light to provide energy for photosynthesis.

chloroplast Double-membrane plastids with chlorophyll, used in photosynthesis, storing starch, and contain genetic information (DNA).

chlorosis Abnormal reduction or loss of the normal green coloration of leaves of plants.

chlorotic Lack green color; without chlorophyll.

choice Most economical and most desirable carcass grade.

cholinesterase Enzyme in the body that breaks down acetylcholine, which makes nerves fire, which makes the rest of the body work.

chromosome Self-replicating genetic structure of cells containing the cellular DNA that bears in its nucleotide sequence the linear array of genes.

chronic That which develops more slowly, lingers and will frequently reappear.

cilia a short, microscopic, hairlike vibrating structure. Cilia occur in large numbers on the surface of certain cells, either causing currents in the surrounding fluid, or, in some protozoans and other small organisms, providing propulsion.

class A group of animals categorized primarily by sex and age.

clay Soil separate consisting of particles less than 0.002 mm in diameter; a soil Class.

clitoris Ventral part of the vulva of the female reproductive tract that is homologous to the penis in the male. It is highly sensory.

clods Produced by tillage when a soil is too wet or dry.

clones Plants regenerated through tissue culture.

clutch Eggs laid by a hen on consecutive days.

coarse texture The texture exhibited by sands, loamy sands and sandy loams (except very fine sandy loam).

coccidia A protozoan organism that causes an intestinal disease called coccidiosis.

coccidiosis A morbid state caused by the presence of organisms called coccidia, which belong to a class of sporozoans.

coccygeal Referring to the coccyx, the small tail-like bone at the bottom of the spine.

cock A male chicken; also called a rooster.

cockerel Immature male chicken.

cod Scrotal area of steer remaining after castration.

codons A triplet (3) of nucleotides bases.

cohesion The attraction of two similar molecules (water to water).

colic A nonspecific pain of the digestive tract.

collagen Main structural protein found in animal connective tissue, yielding gelatin when boiled.

colloid Small humus particles with a large surface area to collect water and nutrients.

colloidal suspension A mixture in which small particles of a substance are dispersed throughout a gas or liquid.

colluvium Parent materials moved by sliding or rolling down a slope, caused by gravity.

colon The large intestine from the end of the ileum and beginning with the cecum to the anus.

colostrum First milk given by a female after delivery of her young. It is high in antibodies that protect young animals from invading microorganisms.

colt A young male of the horse or donkey species.

comb Fleshy outgrowth on the top of a chicken's head, usually red in color, with varying sizes and shapes.

combustion The release of energy all at one time, like a fire or an explosion.

commercial (1) A carcass grade of cattle; (2) livestock that are not registered or pedigreed by a registry (e.g., breed) association.

commercial herds Large group of animals kept together as livestock.

companion animal Used to indicate that a human is frequently in the company of an animal.

comparative anatomy Comparison of parts, organs, etc. of different species.

complete feed A nutritionally adequate feed for animals specifically formulated to be fed as the sole ration and capable of maintaining life and/or promoting production without any additional substance, except water, being consumed.

complete fertilizer Has all three (N,P,K) of the primary elements.

complete flower Flower that contains both male and female structures.

composite breed A breed that has been formed by crossing two or more breeds; also called synthetic breed.

composite sample Created by mixing together many individual soil samples to represent the average soil of the field.

compost Organic residues, or a mixture of organic residues and soil, that have been piled, moistened, and allowed to undergo biological decomposition; Increases plant nutrient availability from organic materials.

composting Piling organic materials under conditions that cause rapid decay. Reduces the carbon-nitrogen ratio and destroys many weed seeds and disease organisms.

compound leaf A leaf that consists of several leaflets.

concentrate A feed used with another to improve the nutritive balance of the total, and intended to be further diluted and mixed to produce a supplement or a complete feed.

conception Fertilization of the ovum (egg).

concrete A construction material mix of natural soil and small amounts of cement and water, is used in building foundations, base for roads, parking lots and airports.

conditioning Growing program for feeder cattle from the time calves are weaned until they enter a feedlot to be finished on a high protein ration; also called backgrounding.

conformation Physical form of an animal; its shape and arrangement of parts.

conifer A tree that bears cones and evergreen needlelike or scale-like leaves.

conservation tillage increase plant nutrient availability from organic materials. A program of crop residue management aimed at reducing erosion by leaving some or all crop residues on the soil surface.

consumptive use The sum of the water lost by evapotranspiration and the amount contained in plant tissues.

contagious disease Infectious disease; a disease that is transmitted from one animal to another.

contaminants Presence of a minor and unwanted constituent in a material such manure, grease, blood, yolk, etc.

continuous cropping Same crop is grown each year.

continuous flow system A system where nutrient solution flows constantly over plant roots; used mostly for commercial production.

contour tillage Follows the contours of the slope, helps prevent erosion and runoff.

conventional tillage The main form of tillage since the invention of the moldboard plow, involves two stages, primary and secondary tillage.

core aeration Mechanically removing plugs of soil and thatch from a lawn.

coronary band (coronet) Boundary between the top of the hoof wall and the skin at the bottom of the pastern where hoof growth begins.

corpus luteum A yellowish body in the mammalian ovary. The cells that were follicular cells develop into the corpus luteum, which secretes progesterone. It becomes yellow in color from the yellow lipids that are in the cells.

cortex An outer layer of tissue immediately below the epidermis of a stem or root.

cotyledon Embryonic leaves that serve as food-storing organs or develop into photosynthetic structure as the seed germinates. Sometimes referred to as button.

cover crop A close-growing crop grown primarily for the purpose of protecting and improving soil between periods of regular crop production or between trees and vines in orchards and vineyards.

cow A sexually mature, female bovine animal; usually one that has produced a calf.

cow hocked A condition in which the hocks are close together but the feet stand apart.

cow-calf operation A management unit that maintains a breeding herd and produces weaned calves.

Cowper's gland Either of a pair of small glands that open into the urethra at the base of the penis and secrete a constituent of seminal fluid.

cranial Applied to the front or head of an animal; directional terms are anterior and superior.

creep An enclosure in which young can enter to obtain feed but larger animals cannot enter; called creep feeding.

creep feeding Supplemental feeding.

crimp Waves, or kinks, in a wool fiber.

cristae Each of the partial partitions in a mitochondrion formed by infolding of the inner membrane.

crop rotation Practice of growing a series of dissimilar types of crops in the same space in sequential seasons for various benefits.

crossbred An animal produced by crossing two or more breeds.

crossbreeding Mating animals from genetically diverse groups (i.e., breeds) within a species.

CRP Conservation Reserve Program.

Crude Fiber(CF) Traditional measure of fiber content in feeds.

Crude Protein(CP) Measures the nitrogen content of a feedstuff, including both true protein and non-protein nitrogen.

cryptorchidism Retention of one or both testicles in the abdominal cavity in animals that typically have the testicles hanging in a scrotal sac.

C-section See cesarean section.

cud Bolus of feed a ruminant animal regurgitates for further chewing.

cull To eliminate one or more animals from the breeding herd or flock.

cultivation A tillage operation used in preparing land for seeding or transplanting or later for weed control and for loosening the soil.

cultivation on the contour The practice of planting and cultivating of crops following the contours of the land.

curd Coagulated milk.

cutability Fat, lean, and bone composition of meat animals; used interchangeably with yield grade.

cuticle The outer layer of the wool fiber.

cuttings A portion of a plant that is removed and made to form roots.

cwt An abbreviation for hundredweight (100 lb).

cycling Infers that nonpregnant females have active estrous (heat) cycles.

cytoplasm Cell contents, other than the nucleus, between the outer cell membrane and the nuclear membrane.

D

dam Female parent, especially domesticated animals such as the horse.

damping-off Plant disease occurring in excessively damp conditions, in particular the collapse and death of young seedlings as a result of a fungal infection.

dark reaction A light independent process that occurs when the products of the light reaction are used to form carbon-to-carbon (C-C) covalent bonds of carbohydrates.

daughter cells Either of the two cells formed when a cell undergoes cell division by mitosis. Have the same genetic makeup as parent cells.

day-neutral A plant that may flower under any day length.

deadheading Removal of old blooms.

decomposition Chemical breakdown of a compound (e.g., a mineral or organic compound) into simpler compounds, often accomplished with the aid of microorganisms.

defoliate Removal of green leaves to prevent staining during harvest.

Degradable Intake Protein (DIP) The fraction of the crude protein which is degradable in the rumen and provides nitrogen for rumen microorganisms to synthesize bacterial crude protein (BCP) which is protein supplied to the animal by rumen microbes.

degree day Maximum temperature + minimum temperature in a day divided by 2 minus 50.

dehiscent Fruit that opens naturally and releases seeds when mature.

dehorn To remove the horns from an animal.

dehydrated Body is lacking water.

deltas Form when rivers flowing into an ocean deposit sediments at the mouth of the river.

demeanor Outward behavior.

denitrification Converts nitrate ions to nitrogen gas which filters out of the soil, completing the nitrogen cycle.

dentrites A short branched extension of a nerve cell, along which impulses received from other cells at synapses are transmitted to the cell body.

deoxyribonucleic acid (DNA) A complex double-stranded molecule consisting of deoxyribose (a sugar), phosphoric acid, and four nitrogen bases (a gene is a piece of DNA). This molecule

encodes genetic information; it is held together by weak bonds between base pairs of nucleotides.

depreciation An accounting procedure by which the purchase price of an asset with a useful life of more than 1 year is prorated over time.

dermatitis Inflammation and redness of skin.

detoxifies Removes toxic substances or qualities.

detritus Dead organisms or their products which becomes soil organic matter.

dewclaws Hard horny structures above the hoof on the rear surface of the legs of cattle, swine and sheep.

dewlap Loose skin under the chin and neck of cattle.

DHIA Dairy Herd Improvement Association An association which dairy producers participate in keeping dairy records. Sanctioned by the National Cooperative Dairy Herd Improvement Program.

DHIR Dairy Herd Improvement Registry A dairy record-keeping plan sponsored by the breed associations.

dicot A flowering plant with two-seed leaves or cotyledons, with xylem and phloem cells separated into zones and nonparallel venation in leaves.

diestrus A period of sexual inactivity between recurrent periods of estrus.

diet Feed ingredients or mixture of ingredients (including water), which are consumed by animals.

Diethylstilbestrol (DES) A synthetic (estrogen) compound recognized by the estrogen receptors as a steroid; no longer used in production.

differentiate Process by which a less specialized cell becomes a more specialized cell type

diffusion Movement of a substance from a place where it is found in high concentration (relatively large amounts) to a place of low concentration (relatively small amounts).

diffusion Moves ions toward the root from the surrounding soil, but the ions are diffusing through soil water rather than being carried with it.

digesta Partially digested food.

digestibility Quality of being digestible. If a high percentage of a given food taken into the digestive tract is absorbed into the body, that food is said to have high digestibility.

digestible nutrient That portion of a nutrient which may be broken down (digested) and absorbed and used by the body.

Digestible Protein (DP) Reported by some laboratories but protein digestibility is influenced by external factors.

digestion The reduction in particle size of feed so that the feed becomes soluble and can pass across the gut wall into the vascular or lymph system.

diploid Having the normal, paired chromosomes of somatic tissue as produced by the doubling of the primary chromosomes of the germ cells at fertilization.

disease Any deviation from a normal state of health.

disinfect To kill, or render ineffective, harmful microorganisms and parasites.

disinfectant A chemical that destroys disease-producing microorganisms or parasites.

dissolution Process of a solid passing into solution.

distal Position that is distant from the point of attachment of an organ.

distended Swollen.

distribution system Canals, ditches, pumps and pipelines that deliver water to an individual farm.

divisions How plants are ordered concerning their characteristics.

DM See dry matter.

DNA See deoxyribonucleic acid.

DNA sequence The relative order of base pairs, whether in a fragment of DNA, a gene, a chromosome, or an entire genome.

dock (1) To cut off the tail; (2) the remaining portion of the tail of a sheep that has been docked; (3) to reduce or lower in value.

doe A female goat or rabbit.

dolomitic limestone A mixture of calcium carbonate and magnesium carbonate ($CaCO_3$ and $MgCO_3$).

dominance (1) A situation in which one gene of an allelic pair prevents the phenotypic expression of the other member of the allelic pair; (2) a type of social behavior in which an animal exerts influence over one or more other animals.

dominant gene A gene that overpowers and prevents the expression of its recessive allele when the two alleles are present in a heterozygous individual.

dormant Condition of live trees (or some plants) at rest in winter.

dorsal Of, on, or near the back of an animal.

dose Refers to the dose (amount) in "milligrams per kilogram" that will kill 50% of a test group of animals.

double cropping Harvesting two crops from the same field in the same year.

draft horse Large horses that usually stand taller than 16 hands at the withers.

dressing percentage Percentage of the live animal weight that becomes the carcass weight at slaughter. It is determined by dividing the carcass weight by the liveweight, then multiplying by 100. Used interchangeably with yield.

drip irrigation A method of irrigation that conserves water by slowly releasing small amounts of water through emitters near the plant.

drop spreader An inverted triangle-shaped hopper is mounted between two wheels and usually pulled by a tractor or pickup truck.

drupe A fruit with a large hard seed called a stone.

dry (cow, ewe, sow, mare) Refers to a non-lactating female.

dry matter (DM) Feed after water (moisture) has been removed (100% dry).

dryland farming The practice of crop production in low-rainfall areas without irrigation.

drylots No pasture; daily feed and water is provided by the caretaker.

dusting Sprinkling flowers or plants with pesticides to protect them from insects and rodents.

dwarfism State of being abnormally undersized. Two kinds of dwarfs are recognized: proportionate and disproportionate.

dysentery Severe diarrhea.

dystocia Difficult birth.

E

edema Abnormal collection of fluid in body tissues that causes soft swelling.

ejaculation Discharge of semen from the male.

electrical conductivity (EC) The capacity of a substance to conduct or transmit electrical current. In soils or water, measured in siemens/meter, and related to dissolved solutes.

element A simple form of matter that cannot be decomposed by ordinary chemical means. Nitrogen (N), phosphorus (P), potassium (K), carbon (C), and the like, are examples of elements.

eliminative behavior Involves voiding of feces and urine.

eluviation The removal of soil material in suspension (or in solution) from a layer or layers of a soil. (Usually, the loss of material in *solution* is described by the term *leaching*.) ***See also*** **leaching.**

emasculator Tool used for castration.

embryo Very early stage of individual development within the uterus. The embryo grows and develops into a fetus. In poultry, the embryo develops within the eggshell.

embryo transfer (ET) The transfer of fertilized eggs from a donor female to one or more recipient females.

embryology The study of body before birth.

emitters A device which regulates the amount of water released; found in drip or trickle irrigation systems

endocrine gland A ductless gland that secretes a hormone into the bloodstream.

endocrinology Science that deals with the study of the endocrine glands and their secretions, the hormones.

endometrium Mucous membrane that lines the uterus.

endoplasmic reticulum Structure extending throughout the cytoplasm of a cell. It functions in the transport of cell products and as a surface for protein synthesis by the ribosomes.

energy Capacity for doing work and for overcoming inertia.

enterotoxemia A disease of the intestinal tract caused by bacterial secretion of toxins.

Entisols Occur in areas of recently deposited parent materials or in areas where erosion or deposition rates are faster than the rate of soil development, such as dunes, steep slopes and flood plains.

entomology The study of insects.

environment Sum total of all external conditions that affect the well-being and performance of an animal.

enzyme A protein that catalyzes a specific chemical change without being used up in the reaction.

eolian deposits Soil moved by wind mostly silt and fine sand.

epicotyl The part of the axis of an embryo above the region of attachment of the cotyledons.

epidemic Any increase of disease in a population.

epidermis The outer layer of cells on all parts of a young plant and on some parts of older plants-for example, the leaves and fruits.

epididymis Long, coiled tubule leading from the testis to the vas deferens.

epididymitis An inflammation of the epididymis.

epimeletic behavior Caregiving and care-seeking behaviors.

epinephrine Adrenaline

epiphysis A piece of bone separated from a long bone in early life by cartilage, which later becomes part of the larger bone.

epistasis A situation in which a gene or gene pair masks (or controls) the expression of another nonallelic pair of genes.

EQIP Environmental Quality Incentives Program

equilibrium phosphorus concentration The concentration of phosphorus in a solution in equilibrium with a soil, the EPC being the concentration of phosphorus achieved by desorption of phosphorus from a soil to phosphorus-free distilled water.

equine Refers to horses.

equine encephalomyelitis An inflammation of the brain of horses.

erosion (1) The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. (2) Detachment and movement of soil or rock by water, wind, ice, or gravity.

erythrocytes Red blood cells.

esophageal groove A groove in the reticulum between the esophagus and omasum. Directs milk in the nursing young ruminant directly from the esophagus to the omasum.

esophagus Muscular tube that connects the pharynx to the stomach.

essential amino acids Those which cannot be made in the body from other substances, or which cannot be made in sufficient amounts for physiological (body function) needs.

essential nutrient A nutrient that cannot be synthesized by the body and must be supplied in the diet.

Estradiol benzoate A natural type of estrogen (female hormone) combined with the chemical benzoate.

estrogen Any hormone (including estradiol, estriol, and estrone) that causes the female to come physiologically into heat and to be receptive to the male. Estrogens are produced by the follicle of the ovary and by the placenta.

estrous An adjective meaning "heat," which modifies such words as cycle. The estrous cycle is the heat cycle, or time from one heat to the next.

estrous synchronization Controlling the estrous cycle so that a high percentage of the females in the herd express estrus at approximately the same time.

estrus The period of mating activity in the female mammal. Same as heat.

ET See embryo transfer.

ethology The study of animal behavior.

ethyl acetate Finger nail polish remover.

eukaryote Cell or organism with membrane-bound, structurally discrete nucleus and other well-developed subcellular compartments. Eukaryotes include all organisms except viruses, bacteria, and blue-green algae.

euthanized Put to death humanely.

eutrophication An increase of algae growth water bodies.

evaporation Water that turns into vapor and is lost in the atmosphere.

evapotranspiration The combined loss of water from a given area, and during a specified period of time, by evaporation from the soil surface and by transpiration from plants.

eviscerate Removal of the internal organs during the slaughtering process.

evolution A change in the genetic makeup of a population with time.

ewe A sexually mature female sheep. A ewe lamb is a female sheep before attaining sexual maturity.

exchange capacity The total ionic charge of the adsorption complex active in the adsorption of ions. ***See also*** **anion exchange capacity; cation exchange capacity.**

exchangeable bases Can easily be replaced by another cation.

exchangeable cations Cations that are weakly held, in direct contact with the soil solution, are exchanged fairly easy.

excretion Expelling of waste products not useful in the animal's body.

exocrine gland Gland that secretes fluid into a duct.

explants Small pieces of plant tissue.

F

fallopian tubes Found at the anterior end of each uterine horn.

fallow Cropland left idle in order to restore productivity.

families Units of a subgroup with similar properties important to the growth of plants and soil use such as texture, temperature and depth.

farrow To deliver, or give birth to pigs; same as parturition.

fat Adipose tissue.

fat-soluble vitamins Any vitamin that is soluble in fats.

FDA See Food and Drug Administration.

feces Bowel movements, excrement from the intestinal tract.

feed additive Ingredient (such as an antibiotic or hormone-like substance) added to a diet to perform a specific role (e.g., to improve gain or feed efficiency).

feed efficiency (1) The amount of feed required to produce a unit of weight gain or milk; for poultry, this term can also denote the amount of feed required to produce a given quantity of eggs; (2) The amount of gain made per unit of feed.

feed mill Convert raw materials into finished feed according to very specific formulas developed by nutritionists.

feeder Animals (e.g., cattle, lambs, pigs) that need further feeding prior to slaughter.

felting Intermingling of wool fibers

feral Domesticated animals that return to nature to survive and reproduce.

fermenting An anaerobic process that converts sugar to acids, gases and/or alcohol.

fertigation Injecting fertilizer into irrigation water.

fertility The capacity to initiate, sustain, and support reproduction. With reference to poultry, the term typically refers to the percentage of eggs that, when incubated, show some degree of embryonic development.

fertilization (1) Practice of adding nutrients to soil or plants for use by plants (2) The union of the egg and sperm.

fertilizer analysis Lists the fertilizer elements in the bag and their percent content, as well as percent nitrogen as nitrate and ammonium.

fertilizer burn Damage to plant tissue resulting from over fertilization.

fertilizer filler A non-nutrient material added to fertilizer.

fertilizer grade Guaranteed minimum analysis (in percent) of the major plant nutrient elements contained in a fertilizer (refers to percent of N, P_2O_5' K_2O, and S).

fertilizer Material applied to soil or plants to supply essential elements.

fertilizer number Refers to a ratio of nitrogen (N) to phosphorus (P) to potassium (K) and reflects the percentage of nutrients in the material.

fertilizer ratio States the relative amounts of nitrogen, phosphate and potash in fertilizers.

fetus Later stage of individual development within the uterus. Generally, the new individual is regarded as an embryo during the first half of pregnancy, and as a fetus during the last half.

fibrous root A type of root system characterized by many branches of fine roots.

field capacity Amount of water a soil can hold against gravity; expressed as a percentage of the dry weight of a soil.

field mapping A soil scientist walks the land to survey it, stopping to probe the soil, and notes slope, evidence of erosion and other features.

filament The thin stalk that attaches the anther to the rest of the flower.

filly A young female horse.

fine texture Soils made up of mostly clay particles.

fingerlings Young fish, usually 1 to 6 in. long.

finish Degree of fatness of an animal.

finishing harrow Completes the job of pulverizing soil when plowing.

firming Once sown, seeds should be pressed into firm contact with the medium (soil) using a tamp.

first aid Assistance given to a person exposed to pesticides before professional help is available.

fistula A running sore at the top of the withers of a horse, resulting from a bruise followed by invasion of microorganisms.

fixation (1) For other than elemental nitrogen: the process or processes in a soil by which certain chemical elements essential for plant growth are converted from a soluble or exchangeable form to a much less soluble or to a nonexchangeable form; for example, potassium, ammonium, and phosphate fixation.

fleece Wool shorn at one time from all parts of the sheep.

flehmen A pattern of behavior expressed in some male animals (e.g., bull, ram, stallion) during sexual activity. The upper lip curls up and the animal in hales in the vicinity of the vulva or urine.

floating Filing horses teeth.

flock A group of sheep or poultry.

flood irrigation On level land, water enters through a head ditch or biplane and is released into the individual checks (areas bounded by levees running downslope) by siphons, gates, or valves.

floodplain Water spread out over large areas. Floodplains tend to be fertile because new soil is added at each flood.

fluid fertilizer A liquid, either a solution or a suspension.

fluid lime Finely ground lime mixed with water or a fertilizer solution and sprayed on the field.

flushing Placing females (typically sheep and swine) on a gaining level of nutrition before breeding to stimulate greater ovulation rates; also, a behavior in fish whereby diseased fish rub against objects in tanks or ponds.

foal A young male or female horse (noun) or the act of giving birth (verb).

foliar feed Spray dilute fertilizer solutions directly on crop leaves.

follicle A blister-like, fluid-filled structure in the ovary that contains the egg.

follicle-stimulating hormone (FSH) A hormone produced and released by the anterior pituitary that stimulates the development of the follicle in the ovary.

Food and Drug Administration (FDA) A U.S. government agency responsible for protecting the public against impure and unsafe foods, drugs, veterinary products, and other products.

food nutrient A substance that provides nourishment for growth or metabolism.

footrot A disease of the foot in sheep and cattle. In sheep, it causes rotting of tissue between the horny part of the foot and the soft tissue underneath.

forage crops Feedstuffs from the leaves and stocks of plants and usually eaten by animals. These could be grasses, legumes, or other cultivated crops.

forages Plant material, leaves and stems.

forb Weedy or broadleaf plants, as contrasted to grasses, that serve as pasture for animals.

founder Nutritional ailment resulting from overeating. Lameness in front feet with excessive hoof growth usually occurs.

freemartin Female born twin to a bull (approximately 9 of 10 will not conceive).

freshen To give birth to young and initiate milk production. This term is usually used in reference to dairy cattle.

fritted trace element Dry fertilizers that dissolve slowly in the soil.

frost susceptibility Likely to be influenced or harmed by frost.

frost wedging Occurs when water freezes and expands in rocks or cracks in the rock, causing it to break apart.

fruit A fleshy, ripened ovary of a tree, shrub, or woody vine eaten raw or cooked.

FSA Farm Service Agency

fumigation Pest control through gaseous pesticides.

fundus the part of a hollow organ (such as the uterus or the gallbladder) that is farthest from the opening.

fungi Large group of spore-producing organisms that includes microorganisms such as yeasts and molds.

fungi Microscopic plants that lack chlorophyll and conductive tissues.

fungicide A chemical used for controlling fungi.

furrow irrigation Water runs down the furrows between plant rows. Water moves to all parts of the soil by capillary action or gravity.

furrow-diking Uses special equipment to create furrows with small ridges or dikes across them, creating basins that capture and hold water.

furrows Long narrow trenches made in the ground by a plow.

G

gait The paces of an animal, especially a horse or dog.

gallop A three-beat gait in which each of the two front feet and both of the hind feet strike the ground at different times.

gametes Male and female reproductive cells; the sperm and the egg.

gametogenesis Process by which sperm and eggs are produced.

gate Door or valve controlling water passage.

gelding A male horse that has been castrated.

Gelisols One of twelve soil orders; frozen, subsoil is permafrost.

gene Fundamental physical and functional unit of heredity.

genetic code Sequence of nucleotides, coded in triplets (codons) along the mRNA, that determines the sequence of amino acids in protein synthesis.

genetic engineering Alteration of the genetic components of organisms by human intervention.

genitalia Male and female anatomy.

genome Sum total of a living organism's genetic material. The genome is divided into chromosomes, which contain genes, and genes are made of DNA.

genomics Study of an organism's entire genome. The field includes intensive efforts to determine the entire DNA sequence of organisms and fine-scale genetic mapping efforts.

genotype Genetic constitution, or makeup, of an individual. For any pair of alleles, three genotypes (e.g., **AA, Aa,** and **aa)** are possible.

gestation Time from breeding or conception of a female until she gives birth to her young.

gilt A young female swine prior to the time that she has produced her first litter.

gizzard An organ found in the digestive tract of a chicken.

glacial drifts Crushed and ground earth, transported and deposited elsewhere by glaciers.

GMO Genetically modified organisms.

goiter Enlargement of the thyroid gland, usually caused by iodine-deficient diets.

golgi apparatus Cell organelle. important for glycosylation and secretion in cells.

Golgi apparatus/bodies Site of accumulation for cells that synthesize and secrete lipids and proteins.

gomer bulls An intact male that has undergone a penile deviation, penile removal, or vasectomy to render him incapable of physically breeding cows.

gonad Testis of the male; ovary of the female.

gonadotrophin Hormone that stimulates the gonads.

GPS (**Global Positioning Systems)** A system of satellites, computers and receivers that is able to determine the latitude and longitude of a receiver on Earth by calculating the time difference for signals from different satellites to reach the receiver.

grade (1) A designation of live or carcass merit (e.g., choice grade); (2) livestock not registered with registry (e.g., breed) association.

grafting A shoot or scion is removed from the desired plant and grafted onto the cambium layers of the scion.

granite meal A rock powder used by growers who do not wish to use chemical fertilizers.

granule Evenly sized grains having a uniform guaranteed nutrient content.

grasses Hardy plants that require nitrogen fertilizer.

gravitational flow Water moving under the influence of gravity.

gravitational potential Soil water is elevated above the water table and carries potential energy from gravity.

gravitational water Water held between saturation and field capacity.

gravity water Water in excess of capillary water.

Great groups A level of the current soil classification system.

green initiatives Actions taken to reduce energy use or support the use of alternative energy sources, reduce greenhouse gas emissions and global warming or to minimize the environmental impact of a business.

green manure A crop grown to be turned under while still green to improve the soil.

Green Revolution A series of initiatives led by Norman Borlaug (1914 – 2009), involving selective breeding of traditional crops for high yields, new hybrids, and intensive cultivation methods adapted to the climates and cultural conditions of densely populated countries such as India, temporarily stemmed the pressure for more food.

greensand A sandy rock or sediment containing a high percentage of the green mineral glauconite and has a very slow K release rate.

grooming behavior Is seen between animals or as they groom themselves.

gross anatomy That which can be seen with the naked eye.

groundwater Subsurface water in the zone of saturation that is free to move under the influence of gravity, often horizontally to stream channels.

growth Increase in protein over its loss in the animal body. Growth occurs by increases in cell numbers, cell size, or both.

growth promotants Used to help increase the efficiency of animal production by increasing weight gain and product output.

guaranteed analysis The nutrient content of commercially available fertilizer is expressed as a percent.

guard cell Openings in the stomata during the daylight hours to permit the free exchange and release of water vapor, and the release of oxygen (O_2).

H

half-life Time it takes for the body to eliminate half of a substance; common measure for use in describing how long substances stay in an animal's body.

hand Used in measuring the height of horses, equivalent to four inches.

handmating Bringing a female to a male for service (breeding), after which she is removed from the area where the male is located; same as handbreeding.

hank A measurement of the fineness of wool. A hank is 560 yards of yarn. More hanks of yarn are produced from fine wools than coarse wools.

hardening off Treatment of tender plants to enable them to survive a more adverse environment.

hardpan A hardened soil layer, limits root growth and infiltration of water.

harmful insects Compete with man for food.

hatchery A place where the hatching of fish or poultry eggs is artificially controlled for commercial purposes.

hay Harvested forage such as alfalfa hay.

hazard A danger or risk.

head A compact mass of flowers at the top of a stem.

heat See estrus.

heat increment Increase in heat production after consumption of feed when an animal is in a thermoneutral environment. It includes additional heat generated in fermentation, digestion, and nutrient metabolism.

heaves A respiratory defect in horses during which the animal has difficulty completing the exhalation of inhaled air.

heavy metals High density metallic elements including lead, cadmium and others.

heifer A young female bovine cow before the time that she has produced her first calf.

helminths A parasitic worm; a fluke, tapeworm, or nematode.

hemoglobin Iron-containing pigment of the red blood cells. It carries oxygen from the lungs to the tissues.

hen An adult female domestic fowl, such as a chicken or turkey.

herbicide A phytotoxic chemical used for killing or preventing plant growth.

herbivorous Subsisting or feeding on plants.

herd A group of animals. Used with beef, dairy, or swine.

heritability Traits passed from generation to generation.

hernia Protrusion of some of the intestine through an opening in the body wall (also commonly called rupture). Two types of hernias, umbilical and scrotal, occur in farm animals.

heterosis Performance of offspring that is greater than the average of the parents; usually the amount of superiority of the crossbred over the average of the parental breeds. Also referred to as hybrid vigor.

heterotroph An organism capable of deriving energy for life processes only from the decomposition of organic compounds and incapable of using inorganic compounds as sole sources of energy or for organic synthesis.

heterozygous A term designating an individual that possesses unlike genes for a particular trait.

heterozygous genotype An organism that has both the dominant and the recessive gene.

hinny Offspring that results from crossing a stallion with a female donkey(jenny).

histology Study of tissues.

Histosils One of twelve soil orders, organic soil.

homeostatis A state of equilibrium, as in an organism or cell, maintained by self-regulating processes.

Homestead Act of 1862 Encouraged Western migration by providing settlers 160 acres of public land. In exchange, homesteaders paid a small filing fee and were required to complete five years of continuous residence before receiving ownership of the land.

homogenized Milk that has had the fat droplets broken into very small particles so that the milk fat stays in suspension in the milk fluids.

homologous Corresponding in type of structure and derived from a common primitive origin.

homozygous A term designating an individual whose genes for a particular trait are alike.

horizon Soil layer.

hormone A chemical substance secreted by a ductless gland; usually carried by the bloodstream to other places in the body where it has its specific effect on another organ.

humid Climate in regions where moisture, when distributed normally throughout the year, should not limit crop production. In cool climate annual precipitation may be as little as 25 cm; in hot climates, 150 cm or even more.

humification Chemical reactions occur in which soil nitrogen reacts with other remains to form compounds that are large, highly complex and resistant to attack and rich in nitrogen.

humus That more or less stable fraction of the soil organic matter remaining after the major portions of added plant and animal residues have decomposed. Usually it is dark in color.

hundred-weight cwt; 100 pounds.

husbandry Management and care of farm animals.

hybrid vigor See heterosis.

hydrated lime Produced by adding water to burned lime, forming hydrated lime, or calcium hydroxide.

hydraulic conductivity An expression of the readiness with which a liquid such as water flows through a solid such as soil in response to a given potential gradient.

hydrologic cycle The circuit of water movement from the atmosphere to the earth and back to the atmosphere through various stages or processes, as precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transpiration.

hydrolysis The reaction between water and a compound (commonly a salt). The hydroxyl from the water combines with the anion from the compound undergoing hydrolysis to form a base; the hydrogen ion from the water combines with the cation from the compound to form an acid.

hydrolyze Decompose by reacting with water.

hydrophilic gel polymers Materials that absorb many times their weight in water, swelling dramatically.

hydrophobic Repelling water so it runs off the surface instead of being absorbed.

hydroponics Cultivation of plants in water.

hydroseeding A mixture of water, seed and chopped straw blown on a slope.

hygroscopic water Water held by electrical attraction and is unable to leave the soil.

hyphae Individual strands of fungi.

hypothalamus A portion of the brain found in the floor of the third ventricle. It regulates reproduction, hunger and body temperature and has other functions.

hypoxia A condition resulting from deficient oxygenation of the blood.

I

igneous rock Rock formed from the cooling of molten rock from deep in the earth.

ileum Distal portion of the small intestine.

immobilization The conversion of an element from the inorganic to the organic form in microbial tissues or in plant tissues, thus rendering the element not readily available to other organisms or to plants.

immune response Generate antibodies to protect against specific diseases.

immunity Ability of an animal to resist or overcome an infection.

immunoglobulins Any of a class of proteins present in the serum and cells of the immune system, that function as antibodies.

impaction Obstructive lodging of food in the intestine.

imperfect flower A flower missing the stamen or pistil.

implant To graft or insert material to intact tissues.

implantation An attachment of the fertilized egg to the uterine wall.

imprinting Learning associated with maturational readiness.

inbreeding Mating of individuals who are more closely related than the average individuals in a population. Inbreeding increases homozygosity in the population but it does not change gene frequency.

Inceptisols One of twelve soil orders, young soils with weak horizons.

incisor A front tooth.

incomplete dominance A form of intermediate inheritance in which one allele for a specific trait is not completely dominant over the other allele.

incomplete flower Flowers that lack one or more of the four regular parts of a complete flower.

incubation period Time between which an egg is placed into an incubator and the young is hatched.

indehiscent Fruit that remains closed at maturity.

infection Invasion of the body tissues by microbial agents or parasites other than insects.

infectious Capable of invading and growing in living tissues; describes various pathogenic microorganisms such as viruses, bacteria, protozoa, and fungi.

inflorescence Groups of flowers arising from a single stem.

ingesta Substances taken into the body as nourishment.

ingestive behavior Includes the mechanics of eating and chewing, obtaining food and water the daily patterns of feeding.

inheritance Transmission of genes from parents to offspring.

inoculation Purposely infecting soil with useful organisms.

inorganic Does not contain carbon or hydrogen.

inorganic fertilizers Are mined or manufactured and are chemically inorganic.

inorganic salts Readily soluble in water, industrially produced from raw materials such as natural gas and minerals.

insemination Deposition of semen in the female reproductive tract.

insoluble A chemical compound that does not readily dissolve in water.

inspection Careful examination or scrutiny.

instinct Inborn behavior.

insulin Hormone secreted by the pancreas to control blood sugar level and utilization of sugar in the body.

integration Bringing together of all segments of a livestock or poultry production program under one centrally organized unit.

intelligence Ability to learn to adjust successfully to situations.

internode The region of the stem between any two nodes.

interphase The first step during mitosis called the Resting Stage This is the period between one division and the next. Individual chromosomes are not visible but the nuclear membrane is visible.

interstitial cells Cells between the seminiferous tubules of the testicle that produce testosterone.

interstitial fluid A solution that bathes and surrounds the cells of multicellular animals.

interveinal chlorosis A yellow leaf with a network of dark veins.

intravenous Within the vein. An intravenous injection is an injection into a vein.

invertebrate Signifies animals without backbones (no vertebrae).

investigative behavior Shown when animals explore or investigate a new environment or object.

irrigation Applying water to crops in such a way as to keep them wet but not too wet. Different irrigation methods depend on the land, sources of water, work involved, and so on.

J

jenny A female donkey.

K

kemp Coarse, opaque, hairlike fibers in wool.

ketosis A condition (also called acetonemia) that is characterized by a high concentration of ketone bodies in the body tissues and fluids.

kid Young goat.

kilocalorie (kcal, Kcal) An amount of heat equal to 1,000 calories. See also calorie.

kingdom First and largest division of living things plants and animals.

kosher meat Meat from ruminant animals with split hooves where the animals have been slaughtered according to Jewish law.

L

labile Easily decomposed organic matter.

lactalbumin A nutritive protein of milk.

lactation Secretion and production of milk.

lactation curve Period during which the mammary glands secrete milk.

lactoglobulin A crystalline protein fraction.

lactose Milk sugar; when digested, it is broken down into one molecule of glucose and one of galactose.

lamb (1) A young male or female sheep, usually less than 1 year of age; (2) to deliver, or give birth to, a lamb.

lambing Act of giving birth. Same as parturition.

lambing jug A small pen in which a ewe is put for lambing. It is also used for containing the ewe and her lamb until the lamb is strong enough to run with other ewes and lambs.

laminitis Inflammation of the sensitive plates of soft tissue (laminae) within the horse's foot caused by physical or physiologic injury. Severe cases of laminitis may result in founder, an internal deformity of the foot. Acute laminitis sets in rapidly and usually responds to appropriate, intensive treatment; chronic laminitis is a persistent, long-term condition that may be unresponsive to treatment.

land capability classification A grouping of kinds of soil into special units, sub-classes, and classes according to their capability for intensive use and the treatments required for sustained use.

langbeinite Potassium-magnesium sulfate. This material ($K_2SO_4 \cdot MgSO_4$) is allowed as a nutrient source if it is used in the raw, crushed form without any further refinement or purification.

larvae The active immature form of an insect.

layer A hen that is kept for egg production.

layering A vegetative method of propagating new plants by producing adventitious roots before the new plant is cut from the parent. A portion of an attached shoot is partially buried underground where roots develop.

LD50 Refers to the dose (amount) in "milligrams per kilogram" that will kill 50% of a test group of animals.

leaching Rainwater passing through the soil moving dissolved substances deeper into the soil.

legume Plants with the characteristic of forming nitrogen-fixing nodules on their roots, in this way making use of atmospheric nitrogen. A pod-bearing member of the Leguminosae family. Includes species, such as peas, beans, peanuts, clovers, alfalfas, sweet clovers, lespedezas, vetches and kudzu.

lethargic Sluggish

leucoplasts Organelles in cells, used for the storage of oil. starch, and proteins.

leukocytes White blood cells.

levee Earthen dike used to enclose water.

levees Coarser materials often deposited in low ridges along a river bank.

LH See luteinizing hormone.

libido Sex drive or the desire to mate on the part of the male.

lice Small, flat, wingless insect with sucking mouthparts that is parasitic on the skin of animals.

ligaments Strong white fibrous tissues that connect bone to bone.

light reaction Occurs in the grana when light strikes chlorophyll a in such a way as to excite electrons to a higher energy state. In a series of reactions, the energy is converted (along an electron transport-like process) into ATP and NADPH. Water is split in the process, releasing oxygen as a by-product of the reaction.

lignin Large highly complex molecules making up 10-30% of plant tissue making plants rigid and resisting decay; contains no nitrogen.

lime Material used to neutralize acidity.

lime requirement The mass of agricultural limestone, or the equivalent of other specified liming material, required to raise the pH of the soil to a desired value under field conditions.

limestone A sedimentary rock composed primarily of calcite (CaCO). If dolomite ($CaCO_3 \cdot MgCO_3$) is present in appreciable quantities, it is called a *dolomitic limestone.*

lipid An organic substance that is soluble in alcohol or ether but insoluble in water; used interchangeably with the term fat.

Lister plow Equipped with two moldboards mounted back to back, resulting in a pattern of 10-inch-high ridges and furrows across the field.

litter The young produced by multiparous females such as swine. The young in a litter are called littermates.

liver flukes A parasitic flatworm found in the liver.

load-bearing capacity What soil is able to support, such as a roadbed or building.

loam A fertile soil of clay and sand containing humus.

lobules A small lobe.

locus Place on a chromosome where a gene is located.

long-day Plants that require a day longer than its critical day length in order to flower; also called short-night plants.

longevity Life span of an animal; usually refers to a long life span.

lumbar group Lower back.

luteinizing hormone (LH) A protein hormone, produced and released by the anterior pituitary, which stimulates the formation and retention of the corpus luteum. It also initiates ovulation.

lymph Transparent, nutritive yellow liquid that exudes from blood vessels into tissue spaces and is drained back into the veins through lymph vessels. Lymph playsan important role in fighting infection and maintaining the body's fluid balance.

lysosomes Small bodies where large numbers of enzymes are stored.

M

macrofauna Animals large enough to see; earthworms, woodchucks.

macrominerals Minerals a body needs in larger amounts, includes: calcium, phosphorus, magnesium, sodium, potassium, chloride and sulfur.

macronutrient Chemical element necessary in relatively larger amounts (usually greater than 500 parts per million in the plant) for plant growth. These elements are C, H, 0, N, P. K, S, Ca, and Mg.

maintenance A condition in which the body is maintained without an increase or decrease in body weight and with no production or work being done.

mammary gland Gland that secretes milk.

mapping units Basis for setting boundaries on a soil map.

marbling Distribution of fat in muscular tissue; intramuscular fat.

marbling scores Amount of fat interspersed in the muscle.

mare A sexually developed female horse.

margin The edge of the leaf.

marketing The act or business of promoting and selling products.

marl A soft, chalky freshwater deposit in swamps, sometimes locally mined.

marrow Soft center of the bone.

mass action The greater the number of an ion in the soil, the more exchange sites it will occupy.

mass flow Carries nutrient ions to roots from nearby soil in water flowing toward roots by capillary action.

masticate To chew food.

mastitis Inflammation of the mammary gland.

masturbation Ejaculation by a male by some process other than sexual intercourse.

matric potential Results from the attraction of water to soil particles.

maturity scores Reflects age of animal at slaughter.

mean (1) Statistical term for average; (2) term to describe animals having bad behavior.

mechanical shaker A machine designed to shake a tree causing fruit or nuts to fall off.

media Growing materials in which plants can be started that are loose, well drained, fine textured, low in nutrients, and free of diseases.

medium texture Intermediate between fine-textured and coarse-textured (soils). It includes the following textural classes: very fine sandy loam, loam, silt loam, and silt.

medulla Inner region of an organ or tissue, especially when it is distinguishable from the outer region or cortex.

meiosis A special type of cell nuclear division that is undergone in the production of gametes (sperm in the male, ova in the female). As a result of meiosis, each gamete carries half the number of chromosomes of a typical body cell in that species.

melengestrol acetate (MGA) A feed additive that suppresses estrus in heifers and is widely used in the feedlot industry.

meristem A region of a plant where cells are not fully differentiated and are capable of repeated mitotic divisions.

mesofauna Multi-celled animals, such as smaller insects.

mesophilic Oganisms whose optimum temperature for growth is an intermediate range, between 59 and 95 degrees Dominant microorganisms in early and late stages of composting.

mesophilic stage Organisms that prefer moderate temperatures begin the decaying process and temperature of compost begins to rise.

messenger RNA (mRNA) RNA that serves as a template for protein synthesis.

metabolism (1) The sum total of chemical changes in the body, including the "building up" and "breaking down" processes; (2) the transformation by which energy is made available for body uses.

Metabolizable Protein Protein available to the animal including microbial protein synthesized by the rumen microorganisms.

metacarpal bones Extend from the knee to fetlock.

metamorphic rock Has been changed by heat or pressure in the earth.

metamorphosis In an insect or amphibian, the process of transformation from an immature form to an adult form in two or more distinct stages.

metaphase Second stage of cell division, between prophase and anaphase, during which the chromosomes become attached to the spindle fibers.

metestrus Period immediately following estrus.

methane also known as swamp-gas is the major component of natural gas fuel. Produced by biological processes in anaerobic soils and is a potent greenhouse gas.

metritis Inflammation (infection) of the uterus.

MGA See melengestrol acetate.

micelle A particle of silicate clay.

microclimate A small, special climate within a macroclimate created by the use of such devices as shelters, heat lamps and bedding.

microfauna Microscopic organisms once considered single-celled animals.

microflora Microscopic organisms once classified as primitive plants, including bacteria, fungi and algae.

microirrigation Low pressure/low discharge.

micromineral A mineral that is needed in the diet in relatively small amounts. The quantity needed is so small that such a mineral is often called a trace mineral; for example: iron, iodine, zinc and selenium.

micronaire A measure of fiber fineness and maturity.

micronutrient Chemical element necessary in relatively small amounts (usually less than 100 parts per million in the plant) for plant growth. These elements are B, Cl, Cu, Fe, Mn, Mo, and Zn.

micronutrients Required in small amounts.

microorganisms Major component of organisms in the soil that cannot be seen with the naked eye include bacteria, fungi, actinomycetes, algae and microfauna.

microtubules Organelles made from tubulin which compose centrioles and cilia.

midrib The large central vein down the middle of the leaf.

milk fat Fat in milk; synonymous with butterfat.

milk letdown Release of milk into the teat cisterns.

milk-ejection reflex An example of endocrine gland activity

mimicry Animals simply doing what the other animals in the herd or group are doing.

mineral fertilizer Ground rocks containing nutrients.

mineral soil Mineral soils have high organic matter content and can form under grasslands. Soil can be a darker color.

mineralization Decomposition or oxidation of the chemical compounds in organic matter into plant-accessible forms.

mites Very small arachnids that are often parasitic upon animals.

mitochondria Cell organelles composed of an outer membrane and a winding inner membrane. A series of chemical reactions that occur on the inner membrane convert the energy of oxidation into the chemical energy of ATP.

mitosis The division of cells in which the genetic material of the cell is duplicated exactly.

mixed fertilizer Many fertilizers contain two or three primary nutrients.

Modified Live Viruses(MLV) Products which contain a live virus but have been changed or modified so as to not cause the disease but still stimulate antibody formation against the disease.

mohair Fleece of the Angora goat.

molasses Syrup that remains after as much sugar as possible has been extracted from sugar cane.

moldboard plowing Buries crop residues, resulting in a clean field that is easy to cultivate.

Mollisols One of twelve soil orders. High organic-matter topsoil and high-base saturation. Usually under prairie vegetation.

mollusk An invertebrate of a large phylum that includes snails, slugs, mussels, and octopuses. They have a soft, unsegmented body and live in aquatic or damp habitats, and most kinds have an external calcareous shell.

molt Shed old feathers, hair, or skin, or an old shell, to make way for a new growth.

monocot A flowering plant with one seed leaf or cotyledon, xylem, and phloem contained within bundles, and parallel venation in leaves.

monogastric Having only one stomach or only one compartment in the stomach. Examples are swine and poultry.

morbidity Measurement of illness; morbidity rate is the number of individuals in a group that become ill during a specified time.

Morrill Land Grant College Act Provided grants of land to states to finance the establishment of colleges specializing in “agriculture and the mechanic arts.”

mortality State of being subject to death.

mottled Spotted or blotched leaves.

mouth Initial opening of the alimentary canal.

mucks Organic soil in which organic matter is mostly decomposed.

mucous membranes An epithelial tissue that secretes mucus which lines many body cavities and tubular organs including the gut and respiratory passages.

mulch Materials such as straw, sawdust, leaves, plastic film, and the like, spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, evaporation, and so on. Apply protective materials to the soil surface.

mulch-till retains a high percentage of crop residue on the surface of the soil.

mule Hybrid that is produced by mating a male donkey with a female horse. They are usually sterile.

multiple fruit A classification of fruit with flowers that are separated but closely clustered such as in mulberry, fig and pineapple.

mutation A change in a gene.

mutton Meat from a sheep that is over 1 year old.

mutualism Specific type of symbiosis between man and animal.

muzzle Nose of horse, cattle, or sheep.

mycorrhizae fungi hyphae (strands) that colonize plant roots to obtain food and nutrients gaining a number of benefits.

myofibrils Primary component part of muscle fibers.

N

narrow-leafed Grasses, sedges, rushes and cattails, which all have parallel veins in their leaves.

nasal cavity Cavity in which the olfactory organs of vertebrate animals are located.

natural breeds Selected by human preference or regional diversity.

natural immunity Refers to the protection an animal has when it is born.

natural selection Sequence of events that lead to a certain characteristic being selected by the environment.

navel Area where the umbilical cord was formerly attached to the body of the offspring.

necropsy Perform a postmortem (after death) examination.

necrosis The death of most or all of the cells in an organ or tissue.

nematodes Large and diverse group of microscopic non-segmented worms that occur in many habitats, but are especially numerous in soil.

net energy Metabolizable energy minus heat increments; the energy available to the animal for maintenance and production.

neuron A nerve cell which transmits messages from one part of the body to another.

Neutral Detergent Fiber (NDF) Useful measures of feeding value, and should be used to evaluate forages and formulate rations.

neutral soil When a soil contains equal concentrations of hydrogen and hydroxyl ions.

neutron moisture probe Measures soil water content using a radioactive source.

NIFA National Institute of Food and Agriculture

nipple See teat.

nitrification An oxidation process that strips hydrogen off the nitrogen atom, producing many hydrogen ions which make soil acid.

nitrogen cycle The sequence of chemical and biological changes undergone by nitrogen as it moves from the atmosphere into water, soil, and living organisms, and upon death of these organisms (plants and animals) is recycled through a part or all of the entire process.

nitrogen fixation The process where bacteria absorb the nitrogen gas (N2) in the atmosphere converting it to nitrogen (N) for plant use.

Nitrogen-Free Extract (NFE) Represents carbohydrates, sugars, starches and a major portion of materials classed as hemicellulose in feeds.

nitrogenous Contains the element nitrogen.

node The region of the stem where one or more leaves are attached. Buds are commonly borne at the node.

nomenclature Giving and using of names.

nonexchangeable ions An ion held very tightly against the colloid and is not normally available to be exchanged with ions in the soil solution.

non-point source Does not come from an easily identifiable point.

nonprotein nitrogen (NPN) Nitrogen in feeds from substances such as urea and amino acids, but not from preformed proteins.

nonruminant Simple-stomached or monogastric animal.

no-till Planting a crop directly into an unprepared seedbed. The tillage involved in planting is nothing more than opening the soil for the purpose of placing seed at the intended depth. This usually involves opening a small slit or punching a hole into the soil. Usually no cultivation occurs during crop production. Weed control is achieved entirely by surface applied and contact herbicides. Also referred to as zero tillage or slot planting.

NPN See nonprotein nitrogen.

NRCS Natural Resources Conservation Service

nucleotide Subunit of DNA composed of a five-carbon sugar, a nitrogenous base, and a phosphate group.

nucleus A membrane-bounded cellular body that contains the principal hereditary material.

nut crop Hard, bony, one-seeded fruit of a woody plant.

nutrient (1) A substance that nourishes the metabolic processes of the body; (2) the end product of digestion.

nutrient availability Amount of soil or fertilizer nutrient supply that can be immediately used by plants.

nutrient carrier Compounds that release nutrients in forms useful to plants.

nutrient density Amount of essential nutrients relative to the number of calories in a given amount of food.

O

offal All organs and tissues removed from inside the animal during the slaughtering process.

omasum One of the stomach components of ruminant animals that has many folds.

omnivorous Feeding on both animal and vegetable substances.

oocyte Ovulated while in the metaphase of meiosis II.

oogenesis Process by which eggs, or ova, are produced.

organelle A structure or part that is enclosed within its own membrane inside a cell and has a particular function.

organic Chemical compounds of carbon combined with other chemical elements and generally manufactured in the life processes of plants and animals. Most organic compounds are a source of food for bacteria and are usually combustible; derived from living organisms (plants and animals).

organic farming A type of sustainable agriculture that prohibits the use of synthetic substances, including inorganic fertilizers, synthetic pesticides and biosolids.

organic fertilizer By-product from the processing of animal or vegetable substances that contain sufficient plant nutrients to be of value as fertilizers.

organic matter Partially decomposed plant and animal residues in soil and soil humus.

organic soil Soil that contains a high percentage of organic matter or materials (greater than 15-20 percent) throughout the soil profile.

organic standards A framework of guidelines and regulations that govern the production of organic crops.

osmosis Passage (diffusion) of water across a membrane as a result of different concentrations on the two sides of the membrane; movement of water from area of higher concentration to area of lower concentration.

osmotic potential A contribution of dissolved salts to the energy of water. Most important in soil with high salt content.

osteoblasts Cells that form layers of bone in the early stages of ossification (bone formation).

ova Plural of ovum, meaning eggs.

ovary Enlarged, bulbous, basal part of the pistil that bears the ovules-the egg-containing units that after fertilization become the seeds attached either to its central axis or to its inner wall of a plant; Female reproductive gland in which the eggs are formed, and progesterone and estrogenic hormones are produced.

oviduct A duct leading from the ovary to the horn of the uterus.

ovine Refers to sheep.

ovulation Shedding, or release, of the egg from the follicle of the ovary.

ovule Contains the female gametes.

ovum Egg produced by a female.

oxidation The loss of electrons by a substance; therefore a gain in positive valence charge, and in some cases, the chemical combination with oxygen gas.

Oxisols One of twelve soil orders. Very weathered and leached soil.

oxytocin A hormone released by the pituitary gland that causes increased contraction of the uterus during labor and stimulates the ejection of milk into the ducts of the mammary glands.

P

pace A lateral two-beat gait in which the right rear and front feet hit the ground at one time and the left rear and front feet strike the ground at another time.

paired structures Similar right and left structures.

palisade cells Cells within the leaf may be formed into two layers: the upper, tightly packed with elongated palisade cells; and the lower. loosely packed with spongy tissue.

palmate In leaves, the principal veins extend from the petiole near the base of the blade similar to the bones in the hand.

palpation Feeling by hand.

panicle Loose, branching cluster of flowers, as in oats.

papillae Any small, nipple-like process or projection.

parasite An organism that lives a part of its life cycle in or on, and at the expense of, another organism. Parasites of farm animals live at the expense of the farm animals, often responsible for plant diseases.

parenchyma Cells with thin cell walls and with large vacuoles. In leaves. Parenchyma cells contain chloroplasts for photosynthesis.

parent cell A cell that is the source of other cells.

parent material Refers to rock or other material in which soil is formed and provides original minerals from which soil develops.

parrot mouth Upper jaw is longer than lower jaw; also called overshot jaw.

parts per million (ppm) A ratio similar to percent, the number of parts in one million parts; percent is the number of parts in one hundred parts.

parturition Process of giving birth.

passive immunity Acquired by transferring of antibodies from an immunized animal to an unimmunized one.

pasteurization Process of heating milk to 161°F and holding it at that temperature for 15 seconds to destroy pathogenic microorganisms.

pastoralism Raising of livestock.

pasture Land covered with grass and other low plants suitable for grazing animals, especially cattle or sheep.

pasture rotation Moving of animals from one pasture to another so that some pasture areas have no livestock on them in certain periods.

pathogen Biologic agent (i.e., bacteria, virus, protozoa, nematode) that may produce disease or illness.

pathogens Disease-causing organisms.

Pearson square Helps to formulate seed rations.

peat Partially decayed vegetation which generally forms in wetland conditions.

pedigree Record of the ancestry of an animal.

pedology Study of soil formation, also known as soil genesis and soil classification and mapping.

pedon Unit of soil from a pit dug in the ground, approximately 5 feet deep, extending from the surface to the depth of root penetration of the deepest roots planted.

pellets A small, condensed formed feed.

pelt Natural, whole-skin covering, including the wool, hair, or fur (e.g., a sheep pelt has the wool left on).

pelvic cavity Contains the terminal part of the digestive system and all of the internal portions of the urogenital system not in the abdominal cavity.

pen mating A cohort of females is brought into the boar's pen and he services them all while they are in the pen.

penetrometer Determines the hardness of soil by measuring the depth or rate of penetration.

penis Male organ of copulation. It serves both as a channel for passage of urine from the bladder as an extension of the urethra, and as a copulatory organ through which sperm are deposited into the female reproductive tract.

per capita Per person.

perched water table Zone of saturated soil that is maintained above the normal water table.

percolation Downward movement of water through the soil profile.

perculation test A soil drainage test involving timing the speed that water takes to drain out of a foot-deep hole that is filled with water.

perennial A plant or plant part that lives for more than two years.

performance test Evaluation of an animal according to its performance.

pericardium A double-walled sac containing the heart and the roots of the great vessels.

perlite Large granules of light-weight expanded volcanic glass.

permafrost Continuously frozen material under a frozen soil horizon.

Permanent Wilting Point (PWP) When soil becomes too dry for the plant to access any water. Plants will not recover even if conditions improve.

peroxisomes Organelles in the plant cell that use oxygen to carry out catabolic reactions.

pesticide A chemical substance used to kill or control pests such as weeds, insects, fungi, mites, algae, rodents, and other undesirable agents.

pet A domestic or tamed animal or bird kept for companionship or pleasure and treated with care and affection.

petiole Stalk of the leaf.

pH acidity or alkalinity.

pH, soil Negative logarithm of the hydrogen ion concentration of a soil [pH = -log (W)]. Degree of acidity or alkalinity as determined by an electrode or indicator at a specified soil moisture content and expressed in terms of the pH scale (1-14); a low pH indicates acid soil, a pH of 7 is neutral, and a high pH indicates an alkaline soil.

phalanges Corresponds to the hand of humans.

pharynx A short, funnel shaped muscular sac between the mouth and esophagus.

phenotype Characteristics of an animal that can be seen and/or measured (e.g., the presence or absence of horns, the color, or the weight of an animal).

pheromones Chemical substances that attract the opposite sex.

phloem One of the two components of the vascular system whose primary function is the transport of manufactured products.

phosphorus index An effort to quantify potential phosphorus hazards on lands, to identify sites with a higher risk of phosphorus movement and to help devise corrective plans.

photoperiod Time during which light is present.

photoperiodism Response of the plant to the length of daylight.

photosynthates Products of photosynthesis are carbohydrates such as sugars and starches (CHOs) and other complex compounds referred to collectively.

photosynthesis Process in a plant of making sugars for growth and respiration from the raw products of water, carbon dioxide, and, sunlight releasing oxygen.

phototropism Tendency of plants to "lean" in the direction of the greatest light intensity.

phylum Each new group within a Kingdom.

physical properties (of soils) Those characteristics, processes, or reactions of a soil that are caused by physical forces and that can be described by, or expressed in, physical terms or equations. Examples of physical properties are bulk density, water-holding capacity, hydraulic conductivity, porosity, and pore-size distribution.

physiology Science that pertains to the functions of organs, organ systems, or the entire animal.

pin bones In cattle, the posterior ends of the pelvic bones that appear as two raised areas on either side of the tail head.

pinnate In the leaf, the secondary veins extend from the midrib, like the divisions of a feather.

pistil Female portion of the flower responsible for the formation of seeds.

pituitary Small endocrine gland located at the base of the brain.

placenta Vascular organ that unites the fetus to the uterus.

plant code A code is printed on every carton produced in a processing plant.

plasmolemma Plasma membrane or cytoplasmic membrane.

plowing A primary broad-base tillage operation that is performed to shatter soil uniformly with partial to complete inversion.

plumule Young shoot.

poikilothermic Having body temperature that varies with the environment.

point source Large manure storage facilities and feedlots, which can be easily identified.

polar bodies Minute cell produced and ultimately discarded in the development of an oocyte.

poll evil An abscess behind the ears of a horse.

polled Naturally or genetically hornless.

pollen Contains the male gametes.

pollination Act of placing pollen from the male reproductive organ onto the female reproductive organ of a flower; often is carried out by bees or wind.

polytocous Giving birth to several offspring at one time.

pome Fruits that have a core and embedded seeds.

pop-up fertilizer Placed in the row with the seeds, rather than beside the seed as in banding.

porcine stress syndrome (PSS) A genetic defect in swine inherited as a simple recessive. It is associated with heavily muscled animals that may suddenly die when exposed to stressful conditions. Their muscle is usually pale, soft and exudative (PSE).

pore space A part of the volume of soil measured for bulk density.

porosity Percentage of soil volume not occupied by solid material.

post-emergence Application of an herbicide after weed or plant has emerged (and is usually visible) from the soil.

posterior Toward the rear end of an animal.

postgastric fermentation Fermentation of feed that occurs in the cecum, behind the area where digestion has occurred.

postnatal See postpartum.

postpartum After birth.

postpartum interval Length of time from parturition to when the dam is again pregnant.

potentiometer Used to measure soil-moisture potential.

poult A young turkey of either sex, from hatching to approximately 10 weeks of age.

poultry Term that includes chickens, turkeys, geese, pigeons, peafowls, guineas and game birds.

PQA-Plus Pork Quality Assurance Plus

precipitation Rain, snow and hail.

precision agriculture A system of very precise field management based on observations and measurements from computers, GPS and GIS systems.

predators Organisms that hunt and eat prey.

predisposing Inclined to.

pre-emergent Of or pertaining to seedlings before they emerge or appear above ground.

preferential flow Flow of free water through large pores, bypassing the general soil matrix.

pregastric fermentation Occurs in the rumen of ruminant animals, before feed passes into the portion of the digestive tract in which digestion actually occurs.

pregnancy testing Evaluation of females for pregnancy through palpation or using an ultrasound machine.

premix A uniform mixture of one or more micro ingredients with diluent and/or carrier. Premixers are used to facilitate uniform dispersion of the micro ingredients in a large mix.

prenatal Prior to being born; before birth.

pre-plant Before planting.

pressurized liquid A fertilizer delivered to an applicator knife through a pressurized delivery system.

prills Smooth, round, dust free fertilizer pellets that have superior flowing and spreading qualities.

primary breeder Responsibility is to develop and reproduce strains of chicken that meet the requirements of chicken producer/processing companies.

primary consumer Eats plants; the second level of the food chain.

primary producer Produce their own food and form the base of the food chain, e.g., plants.

primary tillage Breaks up soil and usually buries residues.

Prime Superior marbling, proper carcass conformation and adequate maturity.

probe A device used to measure backfat thickness in pigs and cattle.

proestrus Phase of the estrous cycle just before heat (estrus).

progeny testing An evaluation of an animal on the basis of performance of its offspring.

progesterone A hormone produced by the corpus luteum that stimulates progestational proliferation in the uterus of the female.

prokaryote Cell or organism lacking a membrane-bound, structurally discrete nucleus and other subcellular compartments. Bacteria are prokaryotes.

prolapsed Turned inside out.

pronuclei Either of a pair of gametic nuclei, in the stage following meiosis but before their fusion leads to the formation of the nucleus of the zygote.

prophase First stage of cell division, before metaphase, during which the chromosomes become visible as paired chromatids and the nuclear envelope disappears.

prostaglandins Chemical mediators that control many physiological and biochemical functions in the body. One prostaglandin (PGF_2 alpha) can be used to synchronize estrus.

prostate A gland of the male reproductive tract that is located just back of the bladder. It secretes a fluid that becomes part of semen at ejaculation.

protective equipment Must be worn when handling, mixing or applying the pesticide.

protein A large molecule of one or more chains of amino acids in a specific order, the order is determined by the base sequence of nucleotides in the gene coding for the protein.

protein supplement Any dietary component containing a high concentration(at least 25%) of protein.

proteomics Study of genetics which refers to all the proteins expressed by a genome; involves the identification of proteins in an organism and the determination of their role in physiological functions.

protoplasm Viscid or semi-liquid and jello-like substance which makes up the living cell.

protoplast Refers to the inside of the cell or the cellular contents.
proventriculus Acts as the true stomach of a bird.

proximal Nearest; the position that is closest to the point of attachment for a limb or bone.

pruning Removing all the old wood and leaving growth that will produce next year's crop.

PSE See pale, soft, exudative.

Psitticosis (parrot fever) Acute or chronic disease characterized by respiratory and systemic infection.

PSS Porcine Stress Syndrome

ptyalin A form of amylase found in the saliva of humans and some other animals.

puberty Age at which the reproductive organs become functionally operative.

pullet Young female chicken from day of hatch through onset of egg production; sometimes the term is used through the first laying year.

pull-type spreader Consists of a bin mounted on a two- or four-wheeled trailer frame and pulled by a tractor or truck.

pulp Squeezed shreds.

pulverized fertilizer Made by crushing fertilizer materials into a powder that is dusty and unpleasant to handle or spread evenly.

pupa Inactive immature form of an insect.

purebred An animal eligible for registry with a recognized breed association.

pylorus Opening from the stomach into the duodenum (small intestine).

Q

qualitative trait A trait expressed categorically because of a sharp distinction between phenotypes (e.g., black and red). Usually only one or a few pairs of genes are involved in the expression of a qualitative trait.

quality grades Animals grouped according to value as prime, choice, etc., based on conformation and fatness of the animals.

quantitative trait A trait expressed on a continuous/numerical scale because of a gradual variation from one phenotype to another (e.g., weaning weight). Usually many gene pairs and environmental influences are involved in the expression of such traits.

R

rabies A disease-causing virus transmitted through bites.

race Considered simply a subdivision of a species which breeds true except for minor variations.

raceme A flower cluster with the separate flowers attached by short equal stalks at equal distances along a central stem.

rack (1) A rapid four-beat gait of a horse; (2) a wholesale cut of lamb located between the shoulder and loin.

radicle Root.

ram A male sheep that is sexually mature.

ram power Number of rams/number of ewes.

rancid Spoiled

rangeland An uncultivated area used for livestock grazing.

ration Amount of total feed fed to an animal over a 24-hour period.

ratoon Second harvest.

reactive behavior An animal reacting to its surroundings such as communicating and visual contact with the rest of the herd, a reflex to pain and discomfort or seeking shelter.

reaping Harvesting

recalcitrant Carbon source not readily transformed by soil microorganisms.

receptacle Where the apex of the pedicel upon which the organs of a flower are developed.

receptor cells Other cells that will respond to a hormone in a target gland or organ.

recessive gene A gene that has its phenotype masked by its dominant allele when the two genes are both present in an individual.

recharge basin Landscape depression in which ponded water percolates through the soil to recharge an underlying aquifer.

recombinant DNA (rDNA) Isolated DNA molecules that can be inserted into the DNA of another cell. rDNA is used in the genetic engineering process.

registered Recorded in the herd book of a breed.

regulations Establish the format for pesticide labels and prescribe what information they must contain.

regurgitate To cast up digested food to the mouth as is done by ruminants.

remote sensing Science of getting information about an object by acquiring data with a device not in contact with that object.

reproduction Production of live, normal offspring.
resetting Circular arrangement of leaves.

residues Crop materials, including roots and tops, that remain on the soil following harvest.

resistance block A meter reads resistance to electrical flow between two electrodes buried in the block.

respiration Process of converting sugars into carbon dioxide, water, and energy, a then conveyed to tissues and cells.. Often, the energy is in the form of heat.

retained placenta Placenta remains within the reproductive tract after parturition has occurred.

reticulum One of the stomach components of ruminant animals that is lined with small compartments, giving a honeycomb appearance.

rhinopneumonitis Equine herpesvirus-1; it produces acute mucus upon primary infection.

rhizomes Underground stems.

ribonucleic acid (RNA) An essential chemical component of living cells, composed of long chains of phosphate, ribose sugar, and several bases; found in the nucleus and cytoplasm of cells and plays an important role in protein synthesis and other chemical activities of the cell.

ribosomes A minute particle consisting of RNA and associated proteins, found in large numbers in the cytoplasm of living cells.

rickets A disease of disturbed ossification of the bones caused by a lack of vitamin D or unbalanced calcium/phosphorus ratio.

ridge-till Seed is planted on 6-inch ridges with crop residues swept into the shallow furrows.

ringbone An ossification of the lateral cartilage of the foot of a horse all around the foot.

riparian An area next to water (stream, river, or lake) where more vegetation grows (compared to a greater distance from the water source) because of the added moisture from the water. Grazing animals usually inhabit this area more frequently than others, thus increasing the possibility of overgrazing.

RNA See ribonucleic acid.

root cap Conductive tissue involved in plant growth.

root hairs Specialized cell extensions that penetrate into the openings between soil particles.

root interception Nutrients are at the root surface and are readily absorbed.

rootbound Restricted roots.

rootstock That part of a tree that becomes the root system of a grafted or budded tree.

roughage A feed that is high in fiber, low in digestible nutrients, and low in energy. Such feeds as hay, straw, silage and pasture are examples.

rumen The large fermentation pouch of the ruminant animal in which bacteria and protozoa break down fibrous plant material that is swallowed by the animal; sometimes referred to as the paunch.

ruminant A mammal whose stomach has four parts (rumen, reticulum, omasum, and abomasum). Cattle, sheep, goats, deer, and elk are ruminants.

rumination Regurgitation of undigested food and chewing it a second time, after which it is again swallowed.

runners New plants are formed at nodes by runners, which are stems from old plants. The stems grow along the ground.

runoff That portion of precipitation or irrigation water that flows off a field and enters surface streams or water bodies; water that flows off the surface of the land without sinking into the soil.

S

saline Salty.

saline seep Small area of saline soil resulting from summer fallow.

saline soils Have high levels of soluble salts except sodium.

saline-sodic soil A soil containing sufficient exchangeable sodium to interfere with the growth of most crop plants and containing appreciable quantities of soluble salts. The exchangeable sodium adsorption ratio is >13, the conductivity of the saturation extract is >4 dS/m (at 25 C), and the pH is usually 8.5 or less in the saturated soil.

salivary glands Exocrine glands that secrete juices in the mouth that are mixed with the food.

salmonella Gram-positive, rod-shaped bacteria that cause various diseases such as food poisoning in animals.

salt index Compares salinity of a product to pure sodium nitrate, given the value of 100.

sand Small coarse-grained pieces of rock.

sanitation Cleanliness.

saprophyte Decomposers, feed on dead organic matter.

satellite farms Production facilities located at a different location from the processing facility.

saturation When all of the pore (voids) spaces in the soil are full of water.

scale (1) Size; (2) equipment on which an animal is weighed.

Scientific Irrigation Scheduling (SIS) Helps irrigators know exactly when and how much to irrigate crops through a system that monitors weather and soil moisture data.

scion A piece of last year's growth with three or four buds; the part inserted on the understock.

sclerenchyma cells Thick cell walls, which make plant fibers.

scrotum A pouch that contains the testes. It is also a thermoregulatory organ that contracts when cold and relaxes when warm, thus tending to keep the testes at a lower temperature than that of the body.

scurvy Swollen and painful joints and bleeding gums in humans and brittleness of bones.

secondary consumer Those predators that consume primary consumers; third level of the food chain.

secondary growth Follows primary growth in some plants and results in an increased girth as layers of woody tissue are laid down. Monocots and herbaceous dicots typically exhibit only primary growth.

secondary sex characteristics Those that begin to show with the onset of puberty.

secondary tillage Produces a fine seedbed by a series of operations that break up the soil into smaller and smaller pieces.

secretory cells Produce products that are subsequently deposited in either the blood stream or a special duct to an organ, where they are used.

sedimentary rock Made of sediments hardened over time by chemicals or pressure.

seed Unit of dispersal for the new plant. It provides some protection from injury and drying and some nourishment for the young plant until it can make its own food.

seed coat Ovule walls develop from the seed coat.

seedbed Soil prepared to receive seeds.

seedstock herds Breeding cattle typically registered with a breed association.

segmentation Parts of an insect body.

selection Differentially reproducing what one wants in a herd or flock.

self-pollination Process by which pollen is transferred from an anther to a stigma of the same flower or another flower of the same plant or cultivar.

semen Fluid containing the sperm that is ejaculated by the male. Secretions from the seminal vesicles, the prostate gland, the bulbourethral glands, and the urethral glands provide most of the fluid.

semi-arid climate Evapotranspiration slightly exceeds precipitation and moisture limits production.

seminal vesicles Accessory sex glands of the male that provide a portion of the fluid of semen.

seminiferous tubules Minute tubules in the testicles in which sperm are produced. They comprise about 90% of the mass of the testes.

separation A form of propagation by which plants that produce bulbs or corms multiply.

sequencing Putting the amino acids in correct order; determining genetic make-up.

Sertoli cells Serve a protective and nutritional role for the germ cells (spermatogonia or sex cells).

service To breed or mate.

settle To become pregnant.

sewage sludge Residual, semi-solid waste; Settled sewage solids combined with varying amounts of water and dissolved materials, removed from sewage by screening, sedimentation, chemical precipitation, or bacterial digestion. Also called *biosolids*.

sex-linked inheritance Phenotypic expression of an allele related to the chromosomal sex of the individual.

sexual behavior Involves the courtship, mating and maternal behavior and is controlled by hormones but may be learned.

shearing Process of removing the fleece (wool) from a sheep.

shelterbelts A row or rows of trees, shrubs, or other plants used to reduce wind erosion, protect young crops and control blowing snow.

shoat A young pig of either sex.

shoe boil Blemish of the horse caused by the horseshoe putting pressure on the elbow when the horse lies down.

shoot bud A bud on the aboveground portion of a plant.

short-day Plants requiring a day shorter than its critical day length or a night longer than its critical dark period in order to flower; also called long-night plants.

shrink Loss of weight, commonly used in the loss in live weight when animals are marketed or loss in weight from grease wool to clean wool.

shrink-swell potential Extent that a clay (class of smallest soil particles) soil will expand or contract when wet or dry.

side-dressing A way of making post-plant applications to row crops and is done by fertilizing along the crop row.

sieve tube cells Long, slender tubes with porous ends (occur only in angiosperms).

sigmoid flexure S-shape of the retracted penis in livestock.

signal word WARNING, DANGER, CAUTION, etc.

silage Forage, corn fodder, or sorghum preserved by fermentation that produces acids similar to the acids that are used to make pickled foods for people.

silicate clays A particle of silicate clay, called a micelle, is a flat, plate-like crystal made of many layers.

silt Intermediate in size between sand and clay and also intermediate in many other ways between sand and clay. These particles are too small to be seen by the eye but are visible under a microscope.

single-grade fertilizer Fertilizer containing only one element.

sinuses Hollow walled spaces.

siphon Tube used to convey liquid upwards.

sire Male parent.

site-specific management Tailoring all crop management practices to the needs of small sampling units in each field.

skins Hides from smaller animals such as pigs, sheep, goats and wild animals; a beef hide weighs less than 30 lb.

slag A byproduct of steel manufacturing.

slow-release Slowly available: Do not go readily into solution in water but will release slowly with time.

smooth muscle cells Spindle-shaped cells that are not striated; they contain one centrally located nucleus per cell.

SNF See solids-nonfat.

sod Grass that has soil and roots attached.

sod crops Cover the ground surface and fill the surface soil with fibrous roots tend to hold the soil in place and reduce erosion.

sodic Containing excessive amounts of sodium. Sodic soil contains sufficient exchangeable sodium to interfere with plant growth (ESP greater than 15 percent).

sodic soil A soil that contains sufficient sodium to interfere with the growth of most crop plants, and in which the sodium adsorption ratio is 13 or greater.

sodium adsorption ratio (SAR) Compares the concentration of sodium ions with the concentration of calcium and magnesium.

soil The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.

soil aeration Exchanges soil and atmospheric air to maintain adequate oxygen for plant roots.

soil aggregation Thread-like strands of fungi twine between soil particles, pulling them together to form loose aggregates.

soil air Underground, plant roots and soil organism's use up oxygen and emit carbon dioxide resulting in soil air that has less oxygen and more carbon dioxide than the atmosphere.

soil amendment A material that can improve soil physically or chemically, making it more suitable for plant growth.

soil classification (*Soil Taxonomy)* The systematic arrangement of soils into groups or categories on the basis of their characteristics.

soil compaction Soils pressed together by weight.

soil complex A mapping unit used in detailed soil surveys where two or more defined taxonomic units are so intimately intermixed geographically that it is undesirable or impractical,

because of the scale being used, to separate them. A more intimate mixing of smaller areas of individual taxonomic units than that described under *soil association.*

soil conservation Protection of the soil from erosion or chemical deterioration. Prevention of excessive loss of fertility by either natural or artificial means. A combination of land use and management methods that safeguard the soil against depletion or deterioration by natural or human-induced factors. A division of soil science concerned with soil conservation by preventive action.

soil depth The distance between the soil surface and the layer which is unfavorable for root growth.

soil erosion Movement of soil particles from one place to another under the influence of water or wind.

soil fertility Ability of soil to supply nutrients for plant growth.

soil food chain Community of organisms living all or part of their lives in the soil.

soil management The sum total of all tillage operations, cropping practices, fertilizer, lime, and other treatments conducted on or applied to a soil for the production of plants.

soil map show diversity of soil types and/or soil properties.

soil order The highest and most general of the soil classification system and based on the conditions under which the soil developed.

soil organic matter The organic fraction of the soil that includes plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by the soil population; commonly determined as the amount of organic material contained in a soil sample passed through a 2-mm sieve.

soil pitting Creates tiny pits on rangeland to capture and retain water.

soil profile Refers to the arrangement and properties of the various soil layers.

soil quality Capacity of a soil to function, within land use and ecosystem boundaries, to sustain biological productivity, maintain environmental quality and promote plant, animal and human health.

soil sampling Systematic gathering of soils for testing.

soil separates Mineral soil particles defined by specified size limits: sand (2.G-0.05 mm), silt (0.05 mm-D.002 mm), and clay (less than 0.002 mm).

soil series A group of soils with similar profiles.

soil solution Water held by soils and the nutrients it contains.

soil survey Tell what soils are in a given location, what the properties of those soils are and how they can be used.

soil taxonomy A grouping of six soil classification levels and how they relate to each other: soil order, suborders, great groups, subgroups, families, soil series.

soil test Analysis of nutrient-supplying properties of a soil sample to determine the capacity of that soil to support crop growth.

soil texture triangle Used to determine textural name of a soil by measuring percentage of sand, silt and clay present in soil.

solids-nonfat Total milk solids minus fat, includes protein, lactose and minerals.

soluble Able to be dissolved.

soluble salt Salts that are readily dissolved in water; more soluble than gypsum.

solvent A liquid capable of dissolving. Water is the universal solvent.

somatic Body cells.

somatic cell count An indicator of the quality of milk.

somatotropin Growth hormone from the anterior pituitary that stimulates nitrogen retention and growth.

sound A horse who has no lameness or illness.

sow A female swine that has farrowed one litter or has reached 12 months of age.

spawn Act of fish laying eggs.

spay To remove the ovaries.

spermatid Haploid germ cell prior to spermiogenesis, the formation of sperm.

spermatogenesis Process by which spermatozoa are formed.

spermatogonia Sperm producing cells.

spermatozoa Viable male sex cells.

spermiogenesis Process by which the spermatid loses most of its cytoplasm and develops a tail to become a mature sperm.

spike A flower head made up of a central stem with the flowers growing directly on it.

split application Involves applying total desired fertilizers needed in several small doses, matching the crop's nutrient uptake during a season.

spontaneous mutations New breeds that showcase a mutation.

stags Castrated male sheep, cattle, goats, or swine that have reached sexual maturity prior to castration.

staking Keeping plants in the correct growing position by using wires, wooden posts, or similar supports.

stallion A sexually mature male horse.

stamen Male part of a flower; it produces pollen.

standard grade Usually older animals and thin animals.

staple length Length of wool fibers.

starter fertilizer Applied while planting to promote growth.

steer A castrated bovine male that was castrated early in life before puberty.

stem Forms the major aboveground structural part of the plant; also is the attachment point for leaves, flowers, and fruit. It also contains the water and food distribution system.

stem-girdling root Tree roots develop in a way that causes some to grow across the stem. As the tree ages, those roots prevent proper development of the trunk and compress the tree's vascular system. Eventually the tree begins to weaken and die and/or the tree may snap off at the soil in high winds.

sterile Inability to produce offspring.

steroid Artificially produced drug similar to the natural hormone that controls inflammation and regulates water balance.

stigma Tip of the style or pistil, especially adapted to receive the pollen grains, which is expanded into a bulb or disk or divided into two or more slender parts.

stocker (cattle) Weaned cattle that are fed high-roughage diets (including grazing) before going into the feedlot.

stocker (fish) Usually 6 to 12 inches in length and less than 0.75 lb.

stolons Aboveground stems.

stomata Pores on the bottom of a leaf through which carbon dioxide enters the plant and water vapor exits.

strangles An infectious disease of horses, characterized by inflammation of the mucous membranes of the respiratory tract.

streptococcus Spherical, gram-positive bacteria that divide in only one plane and occur in chains. Some species cause serious disease.

stress An unusual or abnormal influence causing a change in an animal's function, structure, or behavior.

striated muscle cells Voluntary muscle cells that produce movement; connected to bones and contraction causes movement.

strip cropping Practice of growing crops that require different types of tillage, such as row and sod, in alternate strips, along contours or across the prevailing direction of wind.

strip-till With no primary tillage, a specialized implement tills a band of soil and plant seeds into the band.

strongyles Any of various roundworms living as parasites, especially in domestic animals.

structure Refers to the arrangement of soil particles. A well-developed structure usually indicates the presence of clay.

stud Usually the same as stallion. Also, a place where male animals are maintained (i.e., bull stud).

style Elongated stalk or neck connecting the ovary with the stigma.

subcutaneous Situated beneath, or occurring beneath, the skin. A subcutaneous injection is an injection made under the skin.

subgroup The great groups are subdivided into central concept subgroups that show the central properties of the great group, intergrade subgroups that show properties of more than one great group, and other subgroups for soils with atypical properties that are not characteristic of any great group.

sub-moisture Moisture that is available to crops from below the ground.

subsoil The layer of soil just under the topsoil.

subspecies A subdivision or smaller part of a group of animals (those in a species).

subsurface tillage Tillage with a special sweep-like plow or blade that is drawn beneath the surface, cutting plant roots and loosening the soil without inverting it or without incorporating residues of the surface cover.

succulents Plant leaves are full of juice or sap.

sulfur cycle The collection of processes by which sulfur moves to and from minerals (including the waterways) and living systems.

summer fallow The practice of leaving the soil crop and weeds free to store moisture.

superovulation Hormonally induced ovulation of a greater than normal number of eggs.

supplement A feed used with another to improve the nutritive balance of performance of the total and intended to be (1) fed undiluted as a supplement to other feeds, (2) offered free choice with other parts of the ration separately available, or (3) further diluted and mixed to produce a complete feed.

surface water Occupies lakes, rivers, and ponds and covers approximately 60 million acres of U.S. farm land.

surfactants Ingredients that reduce surface tensions of liquids and are used to reduce and stop foaming to prevent bloat.

suspensions A finely ground fertilizer is coated with a special clay and mixed with water.

sustainable agriculture Agriculture that, over the long-term, enhances environmental quality and the resource base on which agriculture depends; provides for basic human food and fiber needs; is economically viable; and enhances the quality of life for farmers and society as a whole.

SWCD Soil and Water Conservation Districts.

symbiont Organisms that live with another organism in a partnership helpful to both.

symbiosis A biological situation in which at least two different kinds of organisms interact; these can include plants, animals, or plant and animal.

sympatric species Those which can interbreed, but in practice do not because of differences in behavior, breeding, food sources, etc.

Synovex H Synthetic steroid used in meat production.

synovial fluid Secreted by the synovial membrane; helps lubricate the joint.

synthetic Made by chemical synthesis, especially to imitate a natural product.

synthetic organic fertilizers Manufactured by industry but are chemically organic (contain carbon and hydrogen).

T

tack Equipment used for riding or driving horses.

tags (1) Wool covered with manure; (2) abbreviated form of ear tags, used for identification.

tail docking Intentional removal of part of an animal's tail.

taming On the path to domestication, but a tamed animal is not a domestic animal.

taproots Prominent primary roots from which all other lateral rootlets or secondary roots grow. They may divide, become fleshy, and often penetrate deeply into the soil.

taxonomy Organizational system for descriptive classification of plants.

TDN See total digestible nutrients.

teat Protuberance of the udder through which milk is drawn.

telophase Final phase of cell division, between anaphase and interphase, in which the chromatids or chromosomes move to opposite ends of the cell and two nuclei are formed.

temporal bone Either of a pair of compound bones forming the sides and base of the skull.

temporary wilting point (TWP) When a plant begins to lose water faster than it can be absorbed and temporarily wilts, it is called temporary wilting point (TWP). Plants recover when conditions improve.

tendon Tough, fibrous connective tissue at ends of muscle bundles that attach muscle to bones or cartilage structures.

tensiometer Consists of a porous cup filled with water that can be buried to a desired depth in the soil in the vicinity of roots.

terminal When fowers or clusters of flowers are carried on the ends of the axis or branches.

terrace consist of a series of low ridges and shallow channels running across the slope, or on the contour, where it gathers while it seeps in.

testicle Male sex gland that produces sperm and testosterone.

testosterone Male sex hormone that stimulates the accessory sex glands, causes the male sex drive, and causes the development of masculine characteristics.

testosterone propionate A natural hormone which has been combined with a chemical, propionic acid, to increase its half-life.

tetanus Rigid paralytic disease caused by *Clostridium tetani***,** an anaerobic bacterium that lives in soil and feces.

tetrad A group of four similar chromatids formed by the splitting longitudinally of a pair of homologous chromosomes during meiotic prophase.

texture The feel, appearance, or consistency of a surface or a substance.

thermal Temperature

thermophilic The description of an organism that thrives at high temperatures.

thermophilic stage A stage in the composting process characterized by active bacteria which favor a high temperature range of 45° to 75°C (113° to 167°F).

thoracic cavity Chest cavity

thoracic limbs Arms or front legs (including the scapula, arm, radius, ulna, manus, carpus and digits)

threshing Separating grain from the plant.

thrombocytes Platelets in the blood.

thrush Foot disease characterized by degeneration of the hoof frog and a thick, foul-smelling discharge.

thyroid gland Two-lobed endocrine gland in the neck that controls the rate at which basic body functions proceed.

thyroxine Main hormone produced by the thyroid gland, acting to increase metabolic rate and so regulating growth and development.

tibia Corresponds with the shin bone of humans.

till (1) Unstratified glacial drift deposited directly by the ice and consisting of clay, sand, gravel, and boulders intermingled in any proportion. (2) To plow and prepare for seeding; to seed or cultivate the soil.

tillage Working the soil to provide a favorable environment for seed placement and germination and crop growth.

tillers First side shoots in small grains.

tilth Physical condition of soil related to its ease of tillage, fitness as a seedbed, and degree of impedance to seedling emergence and root penetration.

tissue Large groups of organized cells of similar structure to perform specific functions in the plant. The two generalized types of tissues are meristematic and permanent.

tissue culture Process or technique of making plant or animal tissue grow in a culture medium outside the organism.

tissue testing Testing nutrients in the plant.

toeing in Toes of front feet turn in; also called pigeon-toed.

toeing out Toes of front feet turn out; also called splayfooted.

tom A male turkey.

tongue A tool of prehension that is used to grasp the food or to guide it in the mouth and on to the throat.

tonoplast A membrane that bounds the chief vacuole of a plant cell.

top soil Layer of soil moved in normal cultivation.

topdressing An application of fertilizer to a soil after the crop stand has been established.

topography Detailed mapping or charting of soils position in the landscape.

Total Digestible Nutrients (TDN) Includes the total amounts of digestible protein, nitrogen-free extract, fiber, and fat (multiplied by 2.25), all summed together.

total pore space Portion of soil not occupied by solid material but filled with air or water.

toxic Poisonous.

toxoids An inactivated, altered toxins (the poison that is produced by pathogenic bacteria) used to stimulate immunity.

tracheids Elongated, conductive cells, the contents of which are non-living.

translocation Movement of water and dissolved compounds through the plant.

transpiration Process of water exiting the plant through the stomata.

transplant solutions Dilute fertilizer solutions used to water-in newly planted transplants such as tomatoes or bedding plants.

trot A diagonal two-beat gait in which the right front and left rear feet strike the ground in unison, and the left front and right rear strike the ground in unison.

tuber Edible portion of the plant, and botanically, stems not roots. They are stems because they contain all the morphological features of stems.

tuberculosis Caused by bacteria and usually settles in the lungs.

turbidity Muddiness created by stirring up sediment or having foreign particles suspended.

turbinates Cartilaginous bone (not hard) covered by highly vascular (many blood vessels) mucosa which serves to clean and warm the air as the animal breathes in.

turf grasses Collection of grass plants that form a ground cover that requires regular maintenance; for example a golf course.

turgid Condition in which a cell or plant is fully expanded by hydrostatic pressure exerted on the cell wall by the protoplast.

turgor Stiffness in the cells.

U

udder Encased group of mammary glands of animals.

umbel Type of inflorescence.

Undegradable Intake Protein (UIP) Commonly called "bypass protein" because it bypasses rumen breakdown and is mainly digested in the small intestine.

undershot jaw Lower jaw is longer than upper jaw.

unsaturated flow The movement of water in a soil that is not filled to capacity with water.

unsoundness Any defect or injury that interferes with the usefulness of an animal.

urea Often used as a protein substitute in ruminants. It is a source of nitrogen which the rumen "bugs" can use to make bacterial protein.

urogenital system Refers to the urinary tract and the accompanying genitalia (male and female anatomy).

USDA United States Department of Agriculture

uterine horns Two branches of the uterus.

uterus That portion of the female reproductive tract where the young develop during pregnancy.

Utisol One of twelve soil orders. Leached soils of warm climates.

V

vaccination Act of administering a vaccine or antigens.

vaccine Suspension of attenuated or killed microbes or toxins administered to induce active immunity.

vacuole A space or vesicle within the cytoplasm of a cell, enclosed by a membrane and typically containing fluid.

vagina Copulatory portion of the female's reproductive tract. The vestibule portion serves for passage of urine during urination; also serves as a canal through which young pass when born.

variation Deviation from the normal biological form, function, or structure.

variety A plant group different in the wild from the general species. It is often used for varieties named from the general species.

vas deferens Duct that carries sperm from the epididymis to the urethra.

vasectomy Removal of a portion of the vas deferens. As a result, sperm are prevented from traveling from the testicles to become part of the semen.

veal Meat from very young cattle, under 3 months of age.

vector Carrier of disease.

vegetable A plant or part of a plant used as food.

vegetative Period when the plant grows vigorously and rapidly.

vein Vessel through which blood passes from various organs or parts back to the heart.

ventral Lower or abdominal surface of an animal.

ventral cavity Contains most of the viscera or guts.

vermiculite expanded mica

vertebrate Signifies animals without backbones (no vertebrae).

vertical integration A style of business management that allows for maximum control of the products produced.

vertical mulching A band or column of mulching material is placed into a vertiocal slit or narrow hole in the soil.

Vertisol One of twelve soil orders. Soils high in swelling clays that have deep wide cracks when dry.

vesicle An air-filled swelling in a plant.

villi Projections of the inner lining of the small intestine.

virus Ultramicroscopic bundle of genetic material capable of multiplying only in living cells. Viruses cause a wide range of disease in plants, animals, and humans, such as rabies and measles.

viscera Internal organs and glands contained in the thoracic and abdominal cavities.

vitamin An organic catalyst, or component thereof, that facilitates specific and necessary functions; for example: the B-vitamins, vitamins A, D, E and K.

volatile Evaporates rapidly, as in chemical.

volatilization Diffusion into the atmosphere.

volumetric water content Volume of water contained in a given volume of soil.

volunteer plants Plants that may grow following harvest or the next season without being planted.

vulva External genitalia of a female mammal.

W

walk A four-beat gait of a horse in which each foot strikes the ground at a time different from each of the other three feet.

warm-season Refers to plants that are usually killed by frosts and require much warmer temperatures to grow properly. They are planted later in the spring.

water erosion Erosion by water is caused by raindrops, surface flow and gully flow. Water erosion is a selective process in which the organic matter and finer soil particles are removed first. This selective feature of soil erosion rapidly destroys productivity of cultivated lands.

water holding capacity Ability of a soil to retain (hold) water.

water table The depth of the natural level of the water below the surface of the soil.

water-logged soil A condition of poor soil aeration with an oxygen level around zero.

watershed Surrounding land area that drains into a lake, river, or river system.

water-soluble vitamins Carried to the body's tissues but are not stored in the body; the B-vitamins and vitamin C.

water-use efficiency Crop production per unit of water reaching the land the crop occupies.

weaner An animal that has been weaned or is nearing weaning age.

weaning Separating young animals from their dams so that the offspring can no longer suckle.

weed A plant growing where it is not wanted.

wether A male sheep castrated before reaching puberty.

wetland An area of land that has hydric soil and hydrophytic vegetation, typically flooded for part of the year, and forming a transition zone between aquatic and terrestrial systems.

wheel-track planting A practice of planting in which the seed is planted in tracks formed by wheels rolling immediately ahead of the planter.

white cells (leukocytes, white blood cells) Colorless blood cells active in the body's defense against infection or other assault; five types are neutrophils, lymphocytes, eosinophils, monocytes and basophils.

white muscle disease A muscular disease caused by a deficiency of selenium or vitamin E.

whorl Three or more leaves at each node.

wilt When plants lose water more rapidly than they take it up, they wilt. Life processes slow, and growth may even stop.

wilting point (WP) Water between field capacity and saturation is not available to the plants because it is lost through drainage (pulled out by gravity).

wind The perceptible natural movement of the air, especially in the form of a current of air blowing from a particular direction.

wind erosion Erosion by wind is common in dry areas where soils are often bare of vegetation and high wind velocities are common.

winnowing Blowing air through grain to remove chaff.

withers Top of the shoulders.

wool Fibers that grow from the skin of sheep.

Wool Act The Wool Act of 1699 is an Act of the Parliament of England which attempted to heighten taxation and increase control over colonial trade and production.

wool staple A cluster of wool fibers.

woolen A type of yarn that is created from carded wool. It is light, soft and stretchy. It can be used to make blankets, hosiery and flannels.

worsted wool Made from the long fibers that have been combed to make sure the fibers run the same direction and not carded but washed.

X

Xeric Referring to the tropical zone.

xeriscaping A kind of landscaping adapted to dry climates designed to reduce water use.

xylem One of two components of the vascular system whose primary function is to transport water and soil nutrients.

Y

yearling Animals that are approximately 1 year old.

yield Amount of crop produced in response to cultural practices; also dressing percentage.

yield grade Grouping of animals according to the estimated trimmed lean meat that their carcass would provide; used interchangeably with cutability.

yield potential Level of crop productivity that can be obtained under specific physical, chemical, and environmental conditions.

yolk (1) The yellow part of the egg; (2) the natural grease (lanolin) of wool.

yolk sac Layer of tissue encompassing the yolk of an egg.

Z

Zeranol (Ralgro) A synthetic compound (not a steroid) and is recognized in the target cells as estrogen.

zona pellucida A protective covering around the ova, egg.

zygote Cell formed by the union of the male and female gametes, the new organism developing from this cell.