



# ENGLISH FOR

## Agronomy Engineer

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## O vocabulário que todo Comprador deve dominar:

### Orientação:

- 1º Imprima esse documento;
- 2º Destaque com caneta “marca-texto” apenas as palavras que você desconhece;
- 3º Leia a coluna *meaning* para descobrir o significado e evite usar tradutores;
- 4º Construa frases com aplicação das novas palavras que você está aprendendo. Se precisar de inspiração, use o [www.businessdictionary.com](http://www.businessdictionary.com). Faça isso por meio da escrita e não da digitação, pois isso potencializa o armazenamento do novo conhecimento na memória de longo prazo

Bons estudos!

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*Exemplos explicados na videoaula*

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### Português - Inglês

#### ☒ 1 Agronegócios: Agribusiness

*“Several large agribusinesses own most of the farms around here.”*

*“Vários grandes agronegócios são donos da maioria das fazendas por aqui.”*

#### ☒ 2 Toxicidade aguda: Acute toxicity

*“The choice of study length depends on acute toxicity data.”*

*“A escolha da duração do estudo depende dos dados de toxicidade aguda.”*

#### ☒ 3 Compostagem: Compost

*“We've got a container for compost at the bottom of our garden.”*

*“Temos um recipiente para compostagem nos fundos do nosso jardim.”*

☒ **4 Rebanho: Livestock**

*"The land use on the west coast is predominantly livestock: sheep and cattle."*

*"O uso da terra na costa oeste é predominantemente de rebanho: ovelhas e gado."*

☒ **5 Ponto de murcha permanente: Permanent wilting point**

*"Plants will not fully recover once the permanent wilting point has been experienced."*

*"As plantas não se recuperam completamente quando o ponto de murcha permanente for atingido."*

☒ **6 Amostragem de solo: Soil Sampling**

*"We need to carry out visual inspections, soil sampling and examination of farm records."*

*"Precisamos realizar inspeções visuais, amostragem do solo e exame dos registros da fazenda."*

☒ **7 Mapa do solo: Soil Map**

*"The lack of a soil map results in excessive use of agricultural chemicals."*

*"A falta de um mapa do solo resulta no uso excessivo de produtos químicos agrícolas."*

☒ **8 Valor genético: Breeding value**

*"A proper analysis will determine the productivity data and estimation of breeding value."*

*"Uma análise adequada determinará os dados de produtividade e estimativa do valor genético."*

☒ **9 Castração: Castration**

*"Castration will help to improve the temperament and reliability of males."*

*"A castração ajudará para melhorar o carácter e a fiabilidade dos machos."*

☒ **10 Aves: Poultry**

*"Sanitary risks involve the outbreaks of diseases in poultry."*

*"Os riscos sanitários envolvem surtos de doenças em aves."*

☒ **11 Capacidade de campo: Field Capacity**

*"Any more water added to soil at field capacity would drain away by gravity."*

*"Mais água adicionada ao solo na capacidade de campo seria drenada pela gravidade."*

☒ **12 Inseminação artificial: Artificial insemination**

*"Most purebred dairy calves are produced by artificial insemination."*

*"A maioria dos bezerros de raça pura é produzida por inseminação artificial."*

☒ **13 Conservação da biodiversidade: Biodiversity conservation**

*"We must contribute to biodiversity conservation and sustainable use of natural resources."*

*"Devemos contribuir para a conservação da biodiversidade e o uso sustentável dos recursos naturais."*

☒ **14 Rotação de culturas: Crop rotation**

*"Soil samples were collected from the same plots for the duration of one crop rotation cycle."*

*"Amostras de solo foram coletadas das mesmas parcelas durante um ciclo de rotação de culturas."*

☒ **15 Fertilizante: Fertilizer**

*"The loss of fertilizer forced us to use compost which is better for the soil and crops."*

*"A perda de fertilizantes nos forçou a usar composto que é melhor para o solo e as culturas."*

☒ **16 Pesticida: Pesticide**

*"Traces of pesticide in the water were ten times above permissible levels."*

*"Traços de pesticidas na água estavam dez vezes acima dos níveis permitidos."*

☒ **17 Reflorestamento: Reforestation**

*"Reforestation and restoration of the protected areas must begin immediately."*

*"O reflorestamento e a restauração das áreas protegidas devem começar imediatamente."*

☒ **18 Ciclo de vida: Life cycle**

*"In seeds of many species, dormancy is not an all or nothing stage in the plant's life cycle."*

*"Em sementes de muitas espécies, a dormência não é um estágio de tudo ou nada no ciclo de vida da planta."*

☒ **19 Desenvolvimento Rural Sustentável: Sustainable Rural Development**

*"The aim of the rural development plan is to ensure sustainable rural development."*

*"O objetivo do plano de desenvolvimento rural é garantir o desenvolvimento rural sustentável."*

☒ **20 Olericultura: Olericulture**

*"Olericulture is the science of vegetable growing."*

*"A olericultura é a ciência do cultivo de vegetais."*

☒ **21 Desertificação: Desertification**

*"A third of Africa is under threat of desertification."*

*"Um terço da África está sob ameaça de desertificação."*

☒ **22 Colheitadeira: Harvester**

*"Having a harvester more gentle with the crop should reduce damage."*

*"Ter uma colheitadeira mais suave com a colheita deve reduzir os danos."*

☒ **23 Sistema mínimo de cultivo: Minimum cultivation system**

*"The minimum cultivation system generates a series of environmental benefits."*

*"O sistema mínimo de cultivo gera uma série de benefícios ambientais."*

☒ **24 Ninhada: Offspring**

*"The disease can be transmitted from parent to offspring."*

*"A doença pode ser transmitida dos pais para a ninhada."*

☒ **25 Estudo do solo: Soil Survey**

*"Soil survey and study of the chemical composition of leaves can be managed at farm or field level."*

*"O levantamento do solo e o estudo da composição química das folhas podem ser feitos na fazenda ou campo."*

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*Conteúdo adicional*

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Agora confira um glossário bem completo com 202 palavras para Engenheiros Agrônomos em Português e em Inglês.

**ADAPTATION** Process by which an organism changes to be better suited to its environment.

**AEROSOLS** Suspension of solid particles or liquid drops in the air. Aerosols can be naturally occurring or made by people.

**AGRICULTURE** The science, art, and practice of raising crops and livestock.

**AGROECOSYSTEM** Ecosystem that has been modified by inputs of fertilizers, pesticides, energy, and human labor to produce food, fiber, and shelter. Plants and animals selected for specific traits are components of agroecosystems.

**AGRONOMIST** Person who studies and improves soil and plants and helps farmers produce more sustainable crops.

**AGRONOMY** The science of soil and plants and the application of this knowledge to help farmers produce more sustainable crops.

**ALFISOL** A soil order. Soils formed under deciduous trees. Can be good for crops.

**ALGAE BLOOM** A rapid increase in algae in a water system that can be harmful to other organisms.

**ALLELES** Alternate versions of a gene.

**AMINO ACID** Molecules that join together to form proteins, building blocks of organisms.

**ANDISOL** A soil order. Soils formed from volcanic ash. Can be used for crops and pastures.

**ANNUAL** Plants that complete their life cycle in a single year.

**AQUIFER** Natural underground body of water that is often used to supply water for agricultural use.

**ARID** Dry, like a desert.

**ARIDISOL** A soil order. Soils formed under desert conditions. Can be used for rangeland and crops if irrigated.

**ATMOSPHERE** Blanket of gases that surrounds Earth or another planet.

**BACTERIA** Single-celled microorganisms that can be found almost everywhere. They can be beneficial or harmful.

**BAGASSE** Dry pulp, or residue, that remains after extracting the juice from sugarcane and similar plants. Used to make paper and as fuel to generate electricity.

**BIOCHEMISTRY** The study of chemical characteristics and processes of living organisms.

**BIODIESEL** Fuel made from the oil in plants.

**BIOENERGY** Renewable fuel source contained in plants and other organic materials.

**BIOLOGY** The study of living organisms.

**BIOMASS** Organic matter coming from living or recently living plants, animals, and other organisms. Can be used to make fuel.

**BIOSPHERE** All living things on Earth in both land and water ecosystems.

**BIOTECHNOLOGY** Wide range of procedures and techniques to modify living organisms for human purposes. Some techniques, like breeding plants, have been used for thousands of years.

**BLACK WATER** Water polluted with animal or human waste. Not suitable to be re-used to irrigate crops or lawns.

**BLOCKY** A soil structure. Soil particles are arranged into shapes that resemble small cubes with sharp or rounded edges.

**BREEDING** Producing new forms of plants and animals by genetic changes in order to improve them.

**BROMIDE** Chemical compound that includes bromine and behaves a lot like nitrates in fertilizers.

**BROWN STEM ROT** A fungal disease that causes stems to rot.

**Bt COTTON** A genetically engineered cotton that includes a gene from *Bacillus thuringiensis*, a natural soil bacterium that produces proteins that kill certain insects.

**CAPILLARY FRINGE** Area of soil just above the water table where the soil pores are beginning to be filled with water.

**CARBOHYDRATE** One of the three major components of food. Consists of carbon, hydrogen, and oxygen compounds that the body uses for energy.

**CARBON CYCLE** Movement of carbon between Earth's atmosphere, oceans, and ecosystems.

**CARBON DIOXIDE (CO<sub>2</sub>)** Important greenhouse gas composed of carbon and oxygen. Also, the gas that plants need to make food.

**CARBON SINK** A natural reservoir that stores more carbon than it releases. Soil is an excellent carbon sink.

**CARBON SOURCE** Anything that releases carbon into the atmosphere.

**CASH CROP** Crop that is grown to be sold rather than used for another purpose by the farmer.

**CATALYST** Substance that speeds up a chemical reaction.

**CEREAL** A grass grown to produce grain for food or feed. Wheat, corn, rice, and sorghum are all cereals.

**CHLOROPHYLL** Green pigment in plants, algae, and some bacteria that captures light energy for photosynthesis.

**CHROMOSOME** Strand of DNA that carries genetic information in the form of genes.



**CLAY** Smallest-sized soil particles. Often have plate-like shapes. Feels sticky when wet. Also refers to a soil texture that consists of at least 40% clay particles.

**CLIMATE** Weather conditions in an area over a long period of time.

**COAL** Black or dark-brown rock that formed from decayed plants and animals. Can be burned as fuel.

**COASTAL LAND** Area along the boundary where an ocean and land meet.

**COLUMNAR** A soil structure. Soil particles are arranged in tall vertical shapes or columns, often with rounded tops.

**COMPETITIVE SPECIES** Quick growing plants that can keep other plants from growing.

**COMPOST** Decayed organic matter from plants and manure that is used as a fertilizer.

**COMPUTER (MATHEMATICAL) MODELS** Process of using mathematical equations to explain how a complex real-life system works, like climate.

**CONDENSATION** Process by which water, a gas, becomes liquid water.

**CONSERVATION** Preserving or protecting something.

**CONSUMER** An organism that eats other organisms.

**COVER CROP** A crop grown to protect the soil and improve its fertility.

**COWPEA** Type of legume used for food. Also known as black-eyed peas or crowder peas.

**CROP** Plants that people grow for their use. Most crops become food or feed. Some are used to make medicines, fuels, clothes, and other things.

**CROP ADVISER** An agronomist who uses science to advise farmers about the best way to grow their crops.

**CROP DENSITY** The number of plants in a given area.

**CROP ROTATION** Growing different types of plants in a field from year to year.

**CROP SENSORS** Computerized information-based devices used to measure the levels of various nutrients needed by a crop.

**CROPPING PRACTICES** The types of crops that are grown in an area and how and when those crops are grown.

**CROSS** Short for cross pollination.

**CROSS POLLINATION** The process of using pollen from one plant with desirable traits to fertilize the female egg of another plant with the same or different desirable traits.

**CULTIVATOR** A tool or implement used to break up the soil and uproot weeds.

**CULTIVAR** A variety that has been intentionally bred for desirable traits and retains those distinguishing features in future generations.

**CULTIVATE** (noun: CULTIVATION) To dig up soil to loosen it and disrupt weeds. Also called tilling.

**DEAD ZONE** Area in a body of water with reduced biological activity due to a lack of oxygen.

**DECOMPOSER** An organism that breaks down dead or decaying matter into simpler compounds.

**DEGRADED SOIL** Poor quality soil. Degraded soils usually have low fertility because of neglect or abuse.

**DIRECTED SELECTION** Process by which humans select organisms with desirable traits and then control the breeding process so that these traits are passed to offspring.

**DISEASE RESISTANCE** Ability of a plant to defend itself against attacks by pathogens.

**DIVERSITY** Having variety. For example, many species of organisms living together.

**DNA** Deoxyribonucleic acid. A molecule that carries an organism's genetic information.

**DOMESTICATE** To convert wild plants and animals for human purposes. Involves genetic change through many generations of directed selection and breeding.

**DRAINAGE** Removal of water from one area to another. Movement can be on the surface or underground.

**DRIP IRRIGATION** Watering crops so that only the soil in the immediate vicinity of the plants is watered. Usually applied very slowly through a thin plastic tube.

**DROUGHT** Period of little to no precipitation. A long period of drought can damage crops.

**ECOLOGIST** Scientist who studies the interactions between organisms and their environment.

**ECOSYSTEM** Community of organisms (plants, animals, microbes) interacting with the nonliving components of their environment (sunlight, air, water, mineral soil).

**ECOSYSTEM SERVICES** Benefits that people get from ecosystems.

**ELEVATION** Height above sea level.

**EMBRYO** The earliest stage of development of organisms produced by sexual reproduction, like the seed of a plant.

**EMISSIONS** Substances that are released into the atmosphere.

**ENERGYCANE** Sugarcane variety being developed as a source of biofuel. It can tolerate colder temperatures and drier conditions than current varieties.

**ENTISOL** A soil order. Soils formed by deposits from floods, volcanic eruptions, and eroding slopes. Can be very good for crops.

**ENZYME** Protein that increases the rate of chemical reactions in an organism's cells.

**ERODE** (noun: EROSION) To wear away or remove rock or soil particles by wind, water, ice, and gravity.

**ETHANOL** Colorless flammable liquid produced from plants that is used in fuel.

**EVAPORATION** Process by which liquid water becomes a gas (vapor).

**EVAPOTRANSPIRATION** Loss of water from the soil by evaporation and from plants by transpiration.

**EVOLUTION** Natural process of genetic change in organisms over time.

**FAT** One of the three major components of food. Compounds consisting of carbon, hydrogen, and oxygen that can be used by the body for energy. Fat is the major way energy is stored in the body.

**FERTILIZER** Substance added to soil to provide plant nutrients, such as nitrogen, phosphorus, and potassium.

**FIBER** Plant materials used for textiles, paper, rope, baskets, and other consumer goods.

**FLAME BURNING** Using flares of burning liquid fuel to kill weeds.

**FODDER** Plants harvested, dried, and stored for consumption by livestock.

**FOOD SECURITY** The state of all people having enough safe, nutritious food to be active and healthy.

**FORAGE** Leaves and stalks of plants used as food for animals. Grass or hay eaten by animals in a pasture or rangeland setting.

**FOSSIL FUEL** Fuel such as coal, oil, or natural gas, formed in Earth over millions of years from the remains of living organisms.

**FRESHWATER** Water containing few dissolved natural solids, such as salt. It is water we use to drink, grow crops, and run our factories.

**FUNGUS** (plural: FUNGI) A kingdom of organisms distinct from animals and plants. Most fungi get their energy from decomposing plants and animals.

**GELISOL** A soil order. Soils formed in very cold climates with a frozen layer. Growing season too short for crops.

**GENE** A segment of DNA that controls one or more characteristics that can be passed down to offspring.

**GENETIC DIVERSITY** The number of genetic characteristics in a particular species.

**GENETIC ENGINEERING** Making deliberate, controlled changes in the genes of an organism to produce a desired result.

**GENETICALLY MODIFIED ORGANISM (GMO)** An organism whose genetic material has been altered by the techniques of genetic engineering in a way that does not necessarily occur naturally.

**GENETICS** The study of how characteristics of living things are passed from one generation to the next.

**GEOSPHERE** Earth from its outer crust to its core.

**GERMINATE** To start to grow. The first stage in a plant's life cycle.

**GLYCEROL** A syrupy, sweet, colorless or yellow liquid obtained as a byproduct from fats and oil. It is used as a sweetener and in soaps and antifreeze.

**GLYPHOSATE** A kind of herbicide, commercially known as RoundUp. It kills a variety of weeds.

**GPS** Global Positioning System. Navigation system based on satellites that pinpoints your location.

**GRAIN** Seeds of grasses such as wheat, corn, and rice that are used for food.

**GRANULAR** A soil structure. Soil particles are arranged into shapes that resemble granola. Has lots of pores.

**GRAYWATER** Wastewater from bathtubs, showers, sinks, washing machines, and dishwashers.

**GREEN MANURE** Plants that are grown and plowed back into the soil to increase organic matter, increase fertility, and improve soil structure.

### **GREEN REVOLUTION**

A period of time (~1960s) when advances in the science of agronomy improved crop yields and nutrition in developing countries.

**GREENHOUSE** A structure, often made of glass or plastic, that controls the light and temperature while plants are growing.

### **GREENHOUSE EFFECT**

Process in which the gases in Earth's atmosphere absorb heat and cause Earth's surface and air temperatures to increase.

**GREENHOUSE GAS** Carbon dioxide and other gases that absorb solar radiation and contribute to the greenhouse effect.

**GREENSEEKER** Device that can scan the leaves of crop plants and determine their nitrogen levels.

**GREENSPACE** A designated area, like a park, where plants are grown.

**GROUNDWATER** Water that collects underground in the pore spaces of soil and rock. An important source of water for drinking and irrigation.

**GROUNDWATER DISCHARGE** The flow of water out of an underground aquifer.

**HABITAT** Natural environment, or home, of an organism.

**HAY** Leafy plant material that has been cut and dried to use as food for livestock.

**HEAD** Fruit cluster found in some plants like wheat. The seeds that develop in the head are called grains.

**HERBICIDE-RESISTANT**

Plants that have acquired the ability to survive a chemical application that normally would kill them.

**HERBICIDE** Chemical designed to kill weeds.

**HERITABLE** Able to be inherited.

**HETEROGENEOUS** Includes a mixture of substances and characteristics.

**HISTOSOL** A soil order. Soils contain a thick layer of decomposed plant matter. Can be good for crops if drained.

**HORIZON** A layer of soil with properties that differ from the layers above or below it.

**HOST** Plant on which an insect or disease-causing organism lives.

**HUMIDITY** The amount of water vapor in the atmosphere.

**HUMUS** Organic matter, such as highly decomposed leaves.

**HUNGER** Ongoing (chronic) undernourishment from lack of the foods necessary to meet daily energy requirements.

**HYBRIDIZATION** Process of producing plants by crossing parents that are genetically different.

**HYDROCARBON** Long chains of carbon and hydrogen molecules that are the chief components of fossil fuels like petroleum and natural gas.

**HYDROSPHERE** The water on land, underground, and in air.

**INCEPTISOL** A soil order. Young soils found on steep slopes. Can be used for crops.

**INFILTRATION** The slow movement (seepage) of water into soil or rock.

**INFRARED RADIATION**

A type of electromagnetic radiation. Invisible to humans but can be felt by them as heat.

**INHERIT** To get traits from a parent.

**INOCULATE** Add a substance, such as a microorganism, to seeds, soil, or plants.

**IMPERMEABLE LAYER** A layer of material that water cannot pass through.

**INPUTS** Resources such as seed, labor, and fertilizer used in agricultural production.

**INTEGRATED CROP–LIVESTOCK (ICL)** A system that raises both crops and animals on the same farm instead of just one or the other.

**INTEGRATED PEST MANAGEMENT (IPM)** Strategy for managing pests with the least negative effect on the environment, people, and the farmer's budget.

**IRRIGATION** Applying water to land to supply crops with necessary moisture to grow.

**LARVA** Immature life stage of some organisms, like insects.

**LEACHING** The removal of minerals and nutrients from a soil as water passes through it.

**LEGUMES** Plants that get nitrogen from bacteria living on their roots. Legumes have protein-rich seeds called pulses. Examples include peas, soybean, lentils, and beans.

**LIVESTOCK** Animals that are raised on a farm or ranch.



**LOAM** A soil texture with moderate amounts of sand, silt, and clay, sometimes in nearly equal proportions. Good texture for farming and gardening.

**MACRONUTRIENT** A substance that is required in large amounts for growth and development.

**MAIZE** Commonly known in the United States and Canada as corn.

**MALNUTRITION** A condition in which a person does not get enough calories and/or nutrients to maintain health.

**MANAGED ECOSYSTEM** An ecosystem that is modified and controlled by humans, like agriculture.

**MANURE** Waste from animals that can be used to fertilize plants and improve soil quality.

**MASSIVE** A soil that has no structure. Soil particles are completely stuck together.

**MATURE** Fully grown or developed.

**METHANE (CH<sub>4</sub>)** A colorless, odorless gas that can be burned for fuel. Also a greenhouse gas.

**MICROBE** Microscopic organisms, such as bacteria and fungi. Microbes represent the most abundant soil organisms.

**MILO** Sorghum.

**MINERALS** The inorganic particles in soils that weathered from rocks.

**MINING** Process of digging into the earth to extract resources, such as coal.

**MITIGATION** Reducing the severity or seriousness of a problem.

**MOISTURE GAUGE** Device for measuring water content in a substance, like soil.

**MOLLISOL** A soil order. Soils formed under grasslands. Very good for crops.

**MONOCULTURE** Growing a single type of crop in a field at one time.

**MULCH** Materials that are spread on the ground around plants to reduce evaporation, cut down on weed growth, and enrich the soil.

**MUTATION** Random, natural genetic changes in cells. Many stable mutations are heritable and a major source of genetic diversity. Mutations are essential to evolution.

**NATURAL SELECTION** Process by which organisms that are better adapted to their environment tend to survive and produce more offspring. Also referred to as “survival of the fittest.”

**NITRATES** Compounds of nitrogen and oxygen essential to plant growth. Many fertilizers contain nitrates.

**NITROGEN (N)** Macronutrient essential to living things that enhances plant growth and building proteins. Often added to agricultural and garden soils. The most common element in Earth’s atmosphere.

**NITROUS OXIDE (N<sub>2</sub>O)** A colorless, non-flammable gas. A greenhouse gas.

**NON-RENEWABLE RESOURCES** Type of product that can’t be replaced once it is used up, like coal or petroleum.

**NO-TILL FARMING** A way of growing crops. Farmers dig up—till—their fields as little as possible. That saves them money and helps to protect the environment.

**NUTRIENT** Vitamins and minerals that nourish organisms. Essential for growth and reproduction.

**ORGANIC FARMERS** Farmers who avoid the use of traditional commercial pesticides, synthetic fertilizers, sewage, and genetically modified crops, for example.

**ORGANIC MATTER** Material derived from the decay of plants and animals. Always contains compounds of carbon and hydrogen.

**ORGANISMS** Living things such as bacteria, fungi, plants, and animals.

**OXIDIZE** (noun: OXIDATION) To combine with oxygen.

**OXISOL** A soil order. Soils formed in tropical climates. Can be used for crops if fertilized.

**PARENT MATERIAL** The rock material from which soil forms.

**PASTURE** Land covered with grasses and other plants suitable for grazing animals, such as cattle or sheep.

**PATHOGEN** Agent that causes disease. Viruses, bacteria, fungi, and other microorganisms can cause diseases.

**PED** The structural unit formed when soil particles (sand, silt, and clay) bind together.

**PEDOSPHERE** The outermost layer of Earth that is composed of soil.

**PERENNIAL** Plants that live for more than two years as opposed to annuals that grow each year from seeds and biennials that live for only two years.

**PERPETUAL** Continuous event or process.

**PEST** Organisms that damage the health of a growing or a harvested crop, including weeds, harmful insects, and disease-causing microbes.

**PESTICIDE** Chemical or biological substance designed to control a pest.

**PHOSPHORUS (P)** Macronutrient essential to all living things that enhances the development of flowers, fruits, and seeds in plants and the functioning of the nervous system in animals. Often added to agricultural and garden soils.

**PHOTOSYNTHESIS** Process by which plants, some bacteria, and some algae use sunlight to convert carbon dioxide and water into food and release oxygen into the atmosphere.

**PLAINS** A large area of flat land with few trees.

**PLATY** A soil structure. Soil particles are arranged into shapes that resemble flat plates.

**PLOT** Small piece of land, like ones used in agricultural research.

**POLLINATION** Process by which male pollen is transferred to the female reproductive organs of a plant to form seeds.

**POLLUTANT** Substance that contaminates the air, water, or soil.

**PORES** Spaces between soil and rock particles, which can be filled with water or air. A porous soil has lots of empty spaces.

**POTASSIUM (K)** Macronutrient essential to all living things, important for processes like water uptake and pest resistance in plants, muscle growth, and blood circulation in animals. Often added to agricultural and garden soils.

**PRAIRIE** A grassland ecosystem.

**PRECIPITATION** Water falling from clouds as rain, snow, sleet, or hail.

**PRECISION AGRICULTURE** Crop management system. Involves observing, measuring, and responding to variation in nutrient needs, water use, yield, and other factors within fields and between fields of crops.

**PRODUCER** Organisms that make their own food, like plants.

**PROPAGULE** Any part of a plant from which a new plant can develop. Examples are tubers, seeds, spores, runners, and cuttings.

**PROTEIN** An essential component of all living things, consisting of long chains of amino acids. It provides the structure for building muscles, skin, and blood. One of the three major components of food.

**PULSES** Seeds of legumes, such as peas, beans, peanuts, and soybean that are eaten as an important source of protein in many parts of the world.

**QUALITATIVE TRAITS** Simple traits controlled by one or a few genes that clearly differ from individual to individual.

**QUALITY SOIL** Soil that is healthy enough to produce an abundance of crops or livestock year after year.

**QUANTITATIVE TRAITS** Complex traits, such as plant height or yield, controlled by many genes. These traits don't always clearly differ from individual to individual.

**RADIATION** A type of energy wave that is produced by radioactive substances. It can be used to create mutations in plants.

**RANGELAND** Various types of uncultivated land that are used for grazing animals.

**REFUTED** Proved wrong.

**RELIEF** The shape of the land surface created by hills and valleys. Also known as terrain.

**RENEWABLE RESOURCES** Materials that can be made or collected over and over again, such as crops.

**RESISTANCE** An organism's ability to withstand disease or other adverse environmental conditions.

**ROW SPACING** The distance between rows of crop plants in a field.

**RUNOFF** Water from precipitation or irrigation that does not soak into the soil but flows off the land and reaches streams, rivers, and other bodies of water.

**SAND** The largest-sized soil particles. Sand feels gritty. Also refers to a soil texture that consists of at least 85% sand particles.

**SATURATED SOIL** Soil when all the pores are filled with water.

**SEA LEVEL** The level corresponding to the surface of the sea at its the average level between high and low tide.

**SELECTION** Process in which genetic and/or environmental factors determine which traits are inherited by the next generation. May be natural or directed by humans.

**SELF SUFFICIENT** Needing no outside help in satisfying one's basic needs, like food.

**SEMI-DWARF** A trait bred into some crops, so they produce shorter, sturdier plants than is typical for that crop.

**SEXUAL REPRODUCTION** Production of offspring by combining genetic information from male and female parents.

**SILAGE** A moist animal feed made by fermenting grass or other plants. Can be used to make biofuel.

**SILT** Soil particles between sand and clay in size. Silt feels like flour (smooth and velvety). Also refers to a soil texture that consists of at least 80% silt particles.

**SILVOPASTURE** A farm system that combines trees with pasture for livestock. Both the trees and the livestock provide income for the farmer.

**SINGLE-GRAINED** Soil structure where the soil particles are not bound to each other in any way, such as beach sand.

**SMART CONTROLLER/METER** An instrument that uses weather data to manage the amount and timing of irrigation.

**SOIL** A complex mixture of minerals, organic matter, water, and air, which forms on the land surface. Soil is full of life. Can support the growth of plants.

**SOIL CORE** A cylindrical (round) tube-like sample of soil that is removed by drilling a hole into the ground.

**SOIL MOISTURE SENSOR** Device that measures how much water is contained in the soil.

**SOIL ORDERS** Twelve broad groups of soils. Soils in the same order share certain characteristics.

**SOIL PROFILE** A section of a soil that has been cut vertically to expose all its horizons, or layers.

**SOIL SEQUESTRATION** Process of using soil for long-term storage of carbon dioxide and other forms of carbon.

**SOIL SOLARIZATION** Process that uses the sun's heat to kill soil pests.

**SOIL STRUCTURE** The arrangement of soil particles into clusters, called peds, of various shapes.

**SOIL TEXTURE** The relative proportions of sand, silt, and clay particles in a particular soil.

**SOLAR RADIATION** Energy that comes from the sun in the form of electromagnetic waves, including visible light, ultraviolet light, and infrared radiation.

**SPODOSOL** A soil order. Soils formed under coniferous forests. Need fertilizer to grow crops.

**SPORES** Reproductive structures of mold and fungi.

**STEM RUST** A very destructive disease of wheat and other cereal crops that is caused by a fungus.

**STOVER** The stem and leafy parts of field crops such as corn, sorghum, and soybean that are left after harvesting the grains.

**STRAIN** A group of organisms within a species that differ in minor, but important, ways from other organisms in the same species.

**SUBSURFACE** Below the ground surface.

**SUCCUMB** To die from a disease or injury.

**SUDDEN DEATH SYNDROME** A fungal disease that can infect soybean crops.

**SUSCEPTIBLE** Easily affected or harmed by something, like a pathogen.

**SUSTAINABLE** Producing crops and livestock in a way that protects the land, air, and water.

**SYMBIOTIC** A beneficial relationship between organisms that live together.

**TACTICS** Strategy or set of actions for accomplishing a goal.

**TEFF** Cereal crop that will grow in poor, dry soils.

**TILLING (TILLAGE)** Digging up soil to loosen it to prepare for planting crops and to disrupt weeds. Also called cultivation.

**TOLERANCE** Ability of an organism to survive under unfavorable conditions.

**TOPOGRAPHY** Surface features of the land including mountains, hills, creeks, etc.

**TOXIN** Poisonous substance that can harm an organism.

**TRAIT** Characteristic of an individual plant or animal, such as the color of a flower or the shape of a leaf. Genetic traits can be inherited by the individual's offspring.

**TRANSPIRATION** Evaporation of water from the pores in the leaves of plants.

**TUBER** An enlarged underground stem used for food storage by a plant. Has numerous eyes, or buds, that can develop into a new plant. Potato is a tuber.

**TURF** Grass and the attached soil that is held by the roots. Also known as sod. Used to cover recreational areas like lawns, parks, and golf courses.

**ULTISOL** A soil order. Highly weathered soils formed in humid areas. Needs fertilizer to grow crops.

**VADOSE ZONE** The part of Earth between the land surface and the top of the water table.



**VARIABLE** A characteristic or factor that may vary, or change.

**VARIETY** Members of a species that have different inherited characteristics, such as plant height or seed number.

**VERTICAL FARMING** The practice of producing crops in vertically stacked layers.

**VERTISOL** A soil order. Soils that contain a large amount of clay. Not well suited for agriculture.

**VIGILANT** Keeping careful watch for possible danger or difficulties.

**VIRTUAL** Something that does not exist physically but is created by a computer to appear nearly real.

**VITAMIN** Organic compounds in food that are necessary for normal human growth and health.

**WATER CYCLE** The cycle in which water moves between Earth's oceans, atmosphere, and land. Includes precipitation, drainage, evaporation, and transpiration.

**WATER TABLE** The top of the underground level at which rocks and soil are completely wet (saturated) with water.

**WATERLOGGED** Land full of water. Often soil that is too wet for farmers to plant crops or work in their fields.

**WATERSHED** The area of land from which water drains into a river or other body of water.

**WEATHER** The day-to-day conditions of the atmosphere at a particular place that include temperature, moisture, wind, atmospheric pressure, etc.

**WEATHERING** The process that breaks down rocks and minerals into smaller particles that help form soil.

**WEED** A plant out of place. An undesirable plant that can rob a crop of water, nutrients, and space in which to grow.

**WETLANDS** An area of land where the soil is saturated with water, such as a marsh, swamp, or bog.

**WOODLAND** An area of land covered with trees and shrubs.

**YIELD** (verb) To produce harvestable crops for consumption. (noun) The amount of a crop harvested for use.

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