

# Glossary

These definitions apply to how these words are used in this manual.

**Adsorption**

A measure of the degree to which a substance binds to particles.

**Agro-ecosystems**

Ecosystems that are used for agriculture.

**Algal bloom**

A large, visible mass of algae found in surface water bodies.

**Anti-siphon valve**

A valve installed to prevent fuel loss due to gravity.

**Backflow**

The unwanted reverse flow of liquids in a piping system.

**Balanced fertility**

Calculating and applying the appropriate amount of each nutrient needed by a crop.

**Ballasting**

Adding (or removing) weight from a tractor to balance axle weight distribution.

**Banding**

Placing fertilizer below the soil surface in a narrow band, usually at planting time, with the band close to the seed.

**Beneficial management practices (BMPs)**

Practices that benefit the environment while meeting or exceeding legal requirements and being practical for producers to do.

**Bioconcentration**

Accumulation of a persistent substance in the tissue of an organism.

**Biodiversity**

Biological diversity; the variety of living organisms, ecosystems and ecological processes.

**Biological control**

The use of natural agents, such as birds, insects, mammals or fungi, to control pests.

**Biomagnification**

Cumulative increase in the concentration and toxicity of a persistent substance in successively higher levels of the food chain.

**Bollards**

A barrier constructed of a sturdy material, such as steel piping filled with cement, set up close to fuel tanks to guard against collision damage.

**Buffer zone**

An area of land adjacent to a riparian area that is developed or conserved to reduce erosion, intercept contaminations and provide wildlife habitat. The buffer zone is usually left in permanent vegetation.

**Carbon sequestration**

Carbon storage; the transfer of carbon dioxide from the atmosphere into another carbon-based substance.

**Chemfallow**

Chemical fallow; a summerfallow system in which herbicides alone are used to control weeds.

**Closed handling system**

A system for transferring fertilizers or other chemicals directly from the storage container to the applicator equipment, so humans and the environment are never exposed to the chemicals.

**Coarse-textured soil**

Soil containing more than 50% sand and less than 20% clay.

**Collection system**

A method of gathering liquid into a single contained spot to prevent runoff and contamination of water sources.

**Commercial fertilizer**

Fertilizer manufactured from non-renewable resources.

**Conservation fallow**

A broad term for summerfallow systems that maintain plant residues on the soil surface to reduce soil erosion, while still providing weed control and soil moisture conservation. Herbicides or a combination of herbicides and tillage is used to control weeds.

**Conservation tillage**

A broad term for any type of tillage system that leaves 30% or more of the soil surface covered with crop residue after planting.

**Contamination**

Alteration of a material by the introduction of a chemical or other substance that makes the material unfit for a specified use.

**Continuous cropping**

A cropping system in which crops are grown every year with no fallow years in between.

**Conventional fallow**

A summerfallow system in which the fallow field is tilled frequently.

**Conventional tillage**

A tillage system that uses multiple tillage passes for weed control, fertilizer application, seed bed preparation and seeding.

**Cover crop**

A crop planted outside of the normal growing season specifically for soil cover rather than for harvest. These crops are planted to reduce soil erosion and may help reduce leaching of nutrients to the groundwater.

**Crop residues**

Plant material remaining after harvest, which includes stubble, leaves, straw, roots and plant seeds.

**Crusting**

A surface layer of hardened soil that forms a barrier to water and air infiltration when wet. On drying, the layer is more compacted and brittle than the soil beneath it. Crusting makes it harder for plants to emerge and may also increase runoff.

**Direct seeding**

A system that sows seed directly into the stubble of last season's crop. The soil is not tilled in the spring before planting. Crop residues remain on the soil surface, with at least 50% of the stubble upright and anchored.

**Discharge area**

An area where groundwater comes to the soil surface. If the groundwater is saline, a saline seep can form in the discharge area.

**Drop structures**

Structures constructed along waterways to drop water to lower elevations without causing erosion.

**Economic threshold**

The number of pests in a given crop unit sufficient to cause crop loss greater than the cost of control.

**Ecosystem**

A system of living organisms interacting with each other and their environment, linked together by energy flows and material cycling.

**Electrical conductivity (EC)**

A measurement of the flow of electricity through a material, such as water or a soil solution. It can be used as a measure of the soluble salt content of soil, because the more salts in the soil sample, the greater its electrical conductivity.

**Environmental farm plan**

A risk-based, self-assessment checklist that producers use to identify management practices on their operation that may affect the environment. They use the results of their assessment to develop an action plan to address areas of concern.

**Environmentally sensitive areas**

Areas that are especially sensitive to contamination, such as, streams, rivers, lakes, water wells, dugouts, shelterbelts, and neighbours' yards.

**Erosion**

See **Soil erosion**.

**Field shelterbelt**

A barrier of trees or shrubs used to shelter agricultural fields.

**Fine-textured soil**

Soil containing more than 40% clay.

**Flushing bar**

An aluminum bar with chains or belts hanging from it. The bar is attached to the front of a tractor during haying to scare wildlife out of the way of the equipment.

**Fragmentation**

A process by which habitats are increasingly subdivided into smaller units, resulting in the increased isolation of the individual units as well as loss of total habitat area.

**Gear up – throttle down**

A driving technique used to reduce a tractor's use of fuel. The driver reduces the engine speed and shifts up a gear to maintain the same ground speed.

**Grassed waterway**

A broad, shallow channel with a permanent grass cover, which is designed to carry water without causing soil erosion.

**Green manuring**

The practice of growing a short-term crop during a summerfallow period to improve soil tilth, add organic matter and nutrient, to the soil and provide soil cover. After eight to 10 weeks of growth, the green manure crop is worked into the soil, desiccated with herbicides, or hayed to allow soil moisture recharge for the following year's crop.

**Greenhouse gases**

Gases in the atmosphere that trap some of the heat transmitted by the Earth towards space. Greenhouse gases include water vapour, carbon dioxide, ozone, methane, nitrous oxide and chlorofluorocarbons.

**Groundwater**

Water found below the ground surface. This water is free to move by gravity, soaking into the ground from wetlands, lakes or precipitation. The upper surface of the groundwater forms the water table.

**Gully**

A large eroded channel formed in the soil as a result of water runoff.

**Habitat**

The environment in which a plant or animal lives.

**Hardpan**

A hardened soil layer in the lower A or B horizon.

**Ignition sources**

Anything that causes sparks or high heat that could start a fire (e.g. smoking, running an engine, lightning).

**Impermeable**

Resistant to penetration of moisture.

**Infiltration**

The downward flow of water from the land surface into and through the upper soil layers.

**Inorganic fertilizer**

See **Commercial fertilizer**.

**Integrated pest management (IPM)**

A method of pest control that combines mechanical, chemical, biological and cultural means to minimize pest infestations and their impacts.

**Interflow**

The lateral movement of water in the zone between the soil surface and the water table during and immediately after a precipitation event. Interflow water discharges directly into a surface water body.

**Leaching**

The removal of soluble substances by water percolating through the soil down to the water table.

**Lined channel**

A means of dropping water to lower elevations along steep parts of a waterway.

**Licensed landfill**

A place designed to dispose of solid waste safely. All licensed landfill sites must have approval from Alberta Environment.

**Marginal crop land**

Land with characteristics that severely limit annual crop production.

**Medium-textured soil**

Soil containing less than 50% sand and less than 40% clay.

**Mycorrhiza**

A type of soil fungus that forms a win-win partnership with plants, substantially benefiting most agricultural crops. Frequent tillage, fallowed fields and broad-spectrum fungicides often reduce mycorrhizal association.

**Nitrate**

A form of nitrogen that can be absorbed by plants and contribute to growth. Nitrate may come from organic or inorganic sources. Because nitrate is not attracted to soil particles, it can readily move past the root zone of most plants and into groundwater.

**Non-target organism**

See **Target pests**.

**Nutrient**

A substance that provides nourishment for the maintenance of life and growth of plants or animals.

**Nutrient management planning**

an approach to nutrient management that aims to optimize crop yield and quality, minimize fertilizer input costs, and protect soil and water.

**Organic fertilizer**

Fertilizer from organic sources, including manure, compost, decaying plant matter and sewage sludge.

**Organic matter**

See **Soil organic matter**.

**Overgrazing**

Repeated grazing of plants before a sufficient rest or growth recovery period has elapsed. Overgrazing results in a reduction of long-term forage productivity and a deterioration of range condition. It can also result in increased weeds and invasive plant species.

**Overland flow**

The flow of water over a land surface due to direct precipitation. Overland flow generally occurs when the precipitation rate exceeds the infiltration capacity of the soils.

**Overpack**

Put a smaller container into a larger container, so the larger container can catch any leaks from the small container.

**Parasite**

An organism that lives in or on another organism and benefits by deriving nutrients at the other's expense.

**Pathogen**

A bacterium, virus or other microorganism that can cause disease.

**Perennial forages**

Grasses and legumes that grow each spring from plants grown in previous year(s).

**Permanent cover**

Perennial plant cover that protects the soil throughout the year, year after year.

**Pesticide**

A general name for substances used to control pests such as insects, rodents, fungal diseases or weeds. The term includes insecticides, rodenticides, fungicides, and herbicides.

**Pesticide resistance**

See **Resistance, pesticide**.

**pH**

The degree of acidity or alkalinity of a soil, expressed as a measure of free hydrogen ion activity in the soil.

**Pore space**

The space between particles in the soil, occupied by air or water.

**Precision farming**

See **Site-specific farming**.

**Pressure rinse**

A method to properly rinse pesticide containers. Water is sprayed under high pressure against all inside surfaces of the container and the rinsate is added to the sprayed tank.

**Recharge area**

An area where water moves through soil and reaches groundwater.

**Reduced tillage**

A tillage system using only one or two tillage passes prior to seeding (e.g. one pass in the fall and one in the spring).

**Resistance, pesticide**

A build-up of tolerance to a pesticide, usually due to overuse or to appropriate use over an extended period.

**Rinsate**

Wastewater from cleaning the inside of product containers or chemical application equipment.

**Riparian areas**

Lands adjacent to streams, rivers, lakes and wetlands, where the vegetation and soils are strongly influenced by the presence of water.

**Run-on**

Water that flows onto a given area.

**Runoff**

Water that moves across the land as overland flow or that moves laterally in an unsaturated zone as interflow.

**Saline seep**

A groundwater discharge area where salts have gradually accumulated.

**Saline soil**

A soil containing a high enough concentration of soluble salts to interfere with crop growth.

**Secondary containment**

Any structure, such as a dike, built around a chemical storage area to reduce the amount of material that could reach soil or water in the event of a spill or leak.

**Sediments**

Soil particles carried by runoff and deposited in water bodies.

**Shelterbelt**

A barrier of trees or shrubs planted to provide protection from the weather.

**Site-specific farming**

The practice of tailoring farm inputs according to differences in conditions within a farm field. Also called precision farming.

**Slope steepness**

Slope steepness can be expressed in several ways. As a percentage, it is calculated as the (vertical rise/horizontal distance) x 100. As a ratio, it is expressed as the horizontal distance : vertical rise. Thus, if a slope rises 1 m for every 20 m of horizontal distance, the per cent slope is 5% and the slope ratio is 20:1.

**Soil aggregate**

Many soil particles held together in a single, stable mass.

**Soil compaction**

The loss of pore space due to equipment and animal traffic. Compaction makes it difficult for water, air and roots to move through the soil.

**Soil erosion**

The movement of soil particles due to wind, water or tillage.

**Soil organic matter**

The part of the soil that consists of plant and animal residues in various stages of breakdown or decomposition.

**Soil structure**

The manner in which soil particles stick together. A soil with many small aggregates or clumps, lots of pore space and no crust, has good structure.

**Soil texture**

The composition of soil described by its proportion of clay, sand and silt-sized particles.

**Solubility**

A measure of the degree to which a substance can dissolve in a solvent.

**Strip cropping**

The practice of alternating strips of crops with strips of fallow to reduce erosion.

**Strip harvesting**

The practice of leaving strips of crop standing when harvesting. This provides a habitat for insect pests to avoid them moving to an adjacent crop and causing more damage. It also provides habitat for natural enemies to maintain their populations. This will also trap snow and improve soil moisture.

**Summerfallow**

The practice of leaving a field without crop growth for a growing season, using herbicides and/or tillage to control weeds. The term is often used to describe one particular type of summerfallow: conventional fallow.

**Surface water**

All water found on the ground surface, such as lakes, ponds, sloughs, wetlands, dugouts, rivers, creeks, temporary streams, canals and drainage ditches. (Compare to Groundwater.)

**Sustainable**

Practices that provide a flow of goods and/or services over a long period of time without degrading the environment or lowering productivity.

**Target pests**

Pests that a pesticide is specifically designed to control. Anything else affected by the pesticide is a non-target organism.

**Temperature inversion**

When warmer air lies above cooler air near the earth's surface.

**Trap strips**

Strip of a crop seeded around the outside of another crop to attract and trap insects for selective control.

**Triple rinse**

A way to properly rinse chemical product containers. To triple rinse a pesticide container, fill it 10% full of water or other dilutant, cap tightly, and shake the container. Then add the rinsate to the spray tank. Repeat two more times, using fresh water or dilutant for each rinse.

**Volatility**

A measure of the degree to which a substance can evaporate or be vaporized.

**Water body**

Any location where water is present. Water bodies include rivers, streams, wetlands, aquifers and sloughs.

**Water table**

The top of the water-saturated zone in the soil (where all spaces between soil particles are filled with water).

**Waterway**

A low path where surface water collects and flows.

**Wetland**

A low-lying area that tends to be covered by water frequently enough to support aquatic plants and wildlife, at least in some years.

**Zero tillage**

A cropping system in which seeding is the only operation that disturbs the soil. Less than 40% of the soil surface is disturbed during seeding.

## Abbreviations and Conversions

### Nutrient Abbreviations

- ▶ Phosphorus is elemental P
- ▶ Phosphate is  $P_2O_5$
- ▶ Potassium is elemental K
- ▶ Potash is  $K_2O$
- ▶ Nitrogen is N
- ▶ Organic nitrogen is organic N = total N - inorganic N (or ammonium N)
- ▶ Total nitrogen is total N = organic N + inorganic N
- ▶ Inorganic N (also called mineral or plant-available N) is ammonium N and nitrate N. Most of the inorganic N in manure is ammonium form

### Unit Abbreviations and Conversions

- ▶ 1 kilogram (kg) = 1000 milligrams (mg) = 2.205 pounds (lb) = 35.28 ounces
- ▶ 1 kilometre (km) = 1000 metres (m) = 3,281 feet (ft) = 39,370 inches (in) = 0.6214 miles
- ▶ 1 m<sup>3</sup> = 1000 litres (L) = 220 gallons (Imperial) = 264.2 gallons (U.S.)
- ▶ 1 hectare (ha) = 10,000 m<sup>2</sup> = 107,639 ft<sup>2</sup> = 2.471 acres (ac)
- ▶ to convert lb/ac to kg/ha multiply by 1.12 (therefore 1 lb/ac = 1.12 kg/ha)
- ▶ to convert kg/ha to lb/ac multiply by 0.893 (therefore 1 kg/ha = 0.893 lb/ac)
- ▶ 1 tonne = 1000 kg = 2,205 lb = 1.1025 ton (short)
- ▶ 1% = 110 kg/tonne = 10,000 mg/kg = 10,000 parts per million (ppm)
- ▶ 1 ppm = 1 mg/kg (solid) or 1 mg/L (liquid)
- ▶ 1 lb (or kg) of P = 2.29 lb (or kg) of  $P_2O_5$
- ▶ 1 lb (or kg) of K = 1.2 lb (or kg) of  $K_2O$
- ▶ to convert from ppm to lb/ac or kg/ha, the generally accepted procedure is to multiply by a factor of 2 for each 6-in (15-cm) depth of mineral soil or by 4 for each 12-in (30-cm) depth of soil
- ▶ bu = bushels
- ▶ cm = centimetres
- ▶ dS/m = deciSiemens per metre