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A horizon (A-horison)

See soil horizon.

AASHTO classification (AASHTO-klassifikasie)

The official classification of soil materials and soil aggregate mixtures for highway construction used by the American Association of State Highway Transportation Officials.

ABC soil (ABC-grond)

A soil with a distinctly developed profile, i.e. with A, B, and C horizons.

AC soil (AC-grond)

A soil having a profile containing only A and C horizons with no clearly developed B horizon.

abandoned meander (verlate meander)

A meander that has been abandoned by its stream after the formation of a neck cut-off.

abiotic (abioties)

Refers to non-living, basic components and compounds of the environment.

ablation (ablasie)

Separation and removal of rock material and formation of residual deposits, especially by wind action or the washing away of loose and soluble materials. Some writers prefer to restrict the term to wasting of glaciers by melting and evaporation.

abrasion (abrasie)

The wearing away by friction, the chief agents being glaciers and currents of water or wind laden with sand or other rock debris.

abrasion pH (abrasie-pH)

A term designating the characteristic pH achieved by a suspension of a pulverized mineral in water, and resulting from hydrolysis and dissolution reactions.

abrasion platform (abrasieplatform)

An extensive, nearly horizontal, submerged surface produced by long-continued wave erosion. This landform is still in its original position at or near the wave base, with the marine or lake forces still operating on it, and represents the outward continuation of the wave-cut bench towards a flatter surface.

abrasion test (abrasietoets)

A test made on rock materials to determine their resistance to wear during construction operations or their suitability for riprap. The Los Angeles abrasion test (ASTM No. C131) involves tumbling the dry material in a cylindrical drum with 48 mm diameter steel balls for 500 or 1 000 revolutions. Material that breaks down to smaller than No. 12 sieve size is considered the mass loss. The Deval abrasion test (ASTM No. D289) uses a similar machine, using 10 000 revolutions.

absolute age (absolute ouderdom)

The geological age of a fossil organism, rock or geological feature or event given in units of time. Cf. absolute chronology; geological time scale.

absolute chronology (absolute chronologie)

Geochronology in which the time-order is based on absolute age. Usually measured in years by radiometric dating, rather than on superposition and/or fossil content as in relative chronology. Cf. absolute age.

absolute humidity (absolute humiditeit)

See humidity.

absorbance (absorbansie)

The absorbance of a substance transmitting light is defined by

$A = \log (1/T) = \log (I_0/I)$ where

A = absorbance

T = transmittance

I_0 = flux of incident radiation

I = flux of radiation after passing through the substance

Cf. transmittance.

absorption (absorpsie)

- (1) The process by which one substance is taken into and included within another substance. Cf. uptake.
- (2) The physical process by which a substance retains radiant energy as some other form of energy.

absorption, active (absorpsie, aktiewe)

The uptake of ions and water by the plant root as a result of metabolic processes in the plant, frequently against an activity gradient.

absorption, passive (absorpsie, passiewe)

The uptake of ions and water by the plant root as a result of diffusion along an activity gradient.

accelerated erosion (versnelde erosie)

See erosion.

acceleration due to gravity (gravitasieversnelling)

The acceleration of a freely falling body is called the acceleration due to gravity, or the acceleration of gravity, and is usually denoted by the letter g . At or near the earth's surface it is approximately $9,8 \text{ m s}^{-2}$. Cf. gravitational constant.

accessory mineral (bykomstige mineraal)

A discrete mineral occurring in very small amounts in sediments and soils; it is usually a heavy mineral.

accretion (akkresie)

A process of accumulation by flowing water, whether of silt, sand, pebbles, etc. The difference between accretion and alluviation is that the latter is due to retardation of flow whereas the former may be due to any cause and in fact includes alluviation.

accumulation (ions) (akkumulasie (ione))

The movement of ions against a concentration gradient, generally as a result of active transport. It can also occur passively, e.g. by the establishment of Donnan equilibria or by adsorption.

acidophyte (asidofiet; suurverdraend)

Plants that are able to grow under acid soil conditions. Syn. calcifuge.

acid rain (suurreën)

Rain (precipitation) whose pH is less than 5,6 (the normal equilibrium value for carbon dioxide and water). The pH is reduced due to the presence of acids (mainly sulphuric and nitric) produced by the combustion of fossil fuels or released by natural events such as volcanic eruptions.

acid rock (suurgesteente)

An igneous rock containing more than 66% SiO_2 or 10% free quartz. The term "acid" derives from the concept of silica (SiO_2) as an acidic oxide. E.g. granite, rhyolite.

acid soil (suurgrond)

A general term, which in practice refers to a soil with a low pH and in which plant growth may be restricted because of one or more nutritional disorders caused directly or indirectly by the acid soil condition.

See soil reaction; soil pH.

acidity, exchangeable (suurheid, uitruilbare)

The titratable hydrogen that can be replaced from the adsorption complex by a neutral salt solution. Expressed as $\text{cmol}_\text{c}/\text{kg}$ soil.

acidity, total (suurheid, totale)

The total acidity in a soil or clay. Usually it is estimated by a buffered salt determination of cation exchange capacity; by subtracting the exchangeable cations (Ca^{++} , Mg^{++} , K^+ , Na^+), the total acidity is obtained. It also is approximated by the sum of salt replaceable acidity plus residual acidity at the selected pH conditions.

Acrisol (Acrisol)

See soil classification.

actinolite (aktinoliet)

A bright-green or greyish-green monoclinic mineral of the amphibole group: $\text{Ca}_2(\text{Mg},\text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$. It may contain manganese. Actinolite is a variety of asbestos, occurring in long, slender, needle-like crystals and also in fibrous, radiated, or columnar forms in metamorphic rocks (such as schists) and in altered igneous rocks.

actinomycetes (aktinomisetete)

A non-taxonomic term applied to a group of organisms with characteristics intermediate between bacteria and fungi. Most soil actinomycetes are unicellular microorganisms that produce a slender branched mycelium and sporulate by segmentation of the entire mycelium, or more commonly, by segmentation of special hyphae. Includes many but not all organisms belonging to the order Actinomycetales.

active transport (aktiewe vervoer)

The transport of ions, water and other substances within the plant as a result of metabolic processes, frequently against a concentration gradient.

additive (bymiddel)

A material added to a fertilizer to improve its chemical or physical condition. An additive to liquid fertilizer might prevent crystals from forming in the liquid at temperatures where crystallization would normally take place.

adhesion (adhesie)

Refers to a molecular attraction which holds two dissimilar substances in contact, such as water and soil particles.

adjusted SAR (aangepaste NAV)

The sodium adsorption ratio (SAR) adjusted for the presence of bicarbonate ions in the water, according to the equation

$$\text{Adjusted SAR} = \text{SAR} [1 - (8,4 - \text{pH}_c)]$$

where pH_c is the calculated pH of the water if equilibrated with CaCO_3 . Cf. sodium adsorption ratio (SAR).

adobe (adobe)

- (1) A brick or building material of sun-dried earth and straw.
- (2) A clay used in making adobe bricks; broadly: alluvial or playa clay in desert or arid regions.
- (3) A structure made of adobe bricks.

adsorbate (adsorbaat; geadsorbeerde stof)

Molecules, ions or colloids which are adsorbed onto a surface. Cf. adsorbent; adsorption.

adsorbed water (geadsorbeerde water)

Water held in a soil mass by physico-chemical forces and having physical properties substantially different from absorbed water or chemically combined water at the same temperature and pressure. Cf. adsorption.

adsorbent (adsorbent; adsorbeermiddel)

The substance or material which adsorbs molecules, ions or colloids onto its surface. Cf. adsorbate; adsorption.

adsorption (adsorpsie)

The surface retention of solid, liquid or gas molecules or of ions by a solid or liquid, as opposed to absorption, the penetration of substances into the bulk of the solid or liquid. The solid or liquid which adsorbs is termed the adsorbent; the solid, liquid or gas which is adsorbed as molecules, atoms or ions is referred to as the adsorbate. The general term sorption refers to both adsorption and absorption. Chemisorption refers to irreversible adsorption by both physical and chemical forces.

adsorption complex (adsorpsiekompleks)

The group of substances in soil capable of adsorbing other materials. Organic and inorganic colloidal particles form the greater part of the adsorption complex; the non-colloidal particles, such as silt and sand, exhibit adsorption but to a much lesser extent than the colloidal particles.

aeolian (eolies)

- (1) Pertaining to the wind; especially said of rocks, soils, and deposits, (such as loess, dune sand, and some volcanic tuffs) whose constituents were transported (blown) and laid down by atmospheric currents, or of landforms produced or eroded by the wind, or of sedimentary structures (such as ripple marks) made by the wind, or of geologic processes (such as erosion and deposition) accomplished by the wind. Etymol. Greek *Aeolus*, god of the winds. Syn. eolian; eolic.
- (2) Said of the active phase of a dune cycle, marked by diminished vegetal control and increased dune growth.

aeolianite (eolianiet)

A cemented, calcareous dune sand. A consolidated sedimentary rock which has been deposited by wind.

aeolian soil material (eoliese grondmateriaal)

Soil material accumulated through wind action. In South Africa the most extensive aeolian soil materials consist of sandy deposits. In the USA large areas of silty deposits (loess) occur.

aerate (belug)

To impregnate with a gas, usually air. Cf. soil aeration.

aerobic (aërobies)

- (1) Having molecular oxygen as a part of the environment.
- (2) Growing only in the presence of molecular oxygen (aerobic organisms).
- (3) Occurring only in the presence of molecular oxygen (said of certain chemical or biochemical processes, such as aerobic decomposition).

Cf. anaerobic.

afforestation (bebossing; bosaanplanting)

The artificial establishment of a forest or plantation by planting or sowing on land on which such vegetation has not previously, or recently, grown.

agate (agaat)

A fibrous, cryptocrystalline variety of silica, being a variegated chalcedony with colour bands, commonly occupying cavities in volcanic and certain other rocks.

agglomerate (agglomeraat)

A deposit of unordered, coarse, pyroclastic materials.

aggradation (aggradasie)

The process of building up a land surface by deposition; a long-term or geologic trend in sedimentation.

aggregate (aggregaat)

- (1) A single mass or cluster of soil particles, such as a ped, crumb, or granule. Cf. soil structure.
- (2) Crushed rock or gravel screened to sizes for use in road surfaces, concrete, or bituminous mixes.

aggregate stability (aggregaatstabiliteit)

Usually refers to the stability of soil peds or aggregates to breakdown in water or by the impact of falling water drops. It is measured by various wet-sieving or drop impact methods. Cf. air-water permeability ratio; dispersal index; dispersion ratio; geometric mean diameter; mean weight diameter.

aggregation, soil (aggregasie, grond-)

See soil aggregation.

agric horizon (agriese horison)

See diagnostic horison.

agricchemicals (landbouchemikalieë)

Chemical materials used in agriculture, e.g. fertilizers and pesticides.

agricultural gypsum (landbougips)

See gypsum.

agricultural land (landbougrond)

Land on farms regularly used for agricultural production; all land devoted to crop or livestock enterprises, for example, farmstead lands, drainage and irrigation ditches, water supply, cropland, and grazing land of every kind.

agricultural lime (landboukalk)

See lime (agricultural).

agricultural pollution (landboubesoedeling)

Liquid and solid wastes from all types of farming, including runoff containing pesticides and fertilizers; runoff from feedlots; erosion deposits; dust from ploughing; animal manure and carcasses; and crop residues and debris.

agricultural waste (landbou-afval)

Residues resulting from the production of plants and animals for food, including animal and plant rests. Cf. waste.

agriculture (landbou)

The science and art of utilizing the soil; including the gathering in of the crops and the rearing of livestock; farming (in the widest sense).

agronomy (agronomie)

A specialization of agricultural science concerned with the theory and practice of field-crop production and soil management.

air capacity (lugkapasiteit)

See air-filled porosity.

air-dry (lugdroog)

- (1) The condition of a soil at equilibrium with the water vapour of the surrounding atmosphere. The actual water content will depend upon the relative humidity and the temperature of the surrounding atmosphere.
- (2) To allow a material to attain a water content in equilibrium with the surrounding atmosphere.

air-entry value (air-entry pressure) (lugintreewaarde; lugintreedruk)

The critical negative pressure at which outflow of water begins from the largest pore of a soil which had been completely saturated with water. Syn. bubbling pressure.

air-filled porosity (lugporeusheid)

The ratio of the volume of air to soil bulk volume at any given time or under a given condition such as a specified soil water content or soil water matric potential.

air permeability (lugdeurlatendheid; lugpermeabiliteit)

The ability of soil to conduct air as a result of pressure differences. To calculate the air permeability (or conductivity), Darcy's Law may be used. Cf. soil water: Darcy's Law.

air pollution (lugbesoedeling)

The presence of one or more chemicals in high enough concentrations in the air to harm humans, animals, vegetation, water, or soil.

air-water permeability ratio (lug-waterdeurlatendheid verhouding)

The ratio of the permeability of soil to air and to water. It is an index of the stability of soil structure. A ratio of 1 indicates a stable porous medium, while a ratio of 20 is often taken as the threshold value for identifying unstable soils.

albedo (albedo)

The proportion of incident radiation that is reflected from a surface, for the visible waveband. It also indicates the lightness or darkness of a surface. Cf. reflection coefficient.

albic E horizon (obsolete) (albiese E-horison (verouderd))

See diagnostic horizon.

albic horizon (albiese horison)

See diagnostic horizon.

albite (albiet)

A colourless or milky-white triclinic mineral of the feldspar group: $\text{NaAlSi}_3\text{O}_8$. It is a variety of plagioclase with composition ranging from $\text{Ab}_{100}\text{An}_0$ to $\text{Ab}_{90}\text{An}_{10}$. Albite occurs in all groups of rocks, forming a common constituent of granite and of various acid-to-intermediate igneous rocks. Cf. feldspar group.

alcrete (alkreet)

Aluminium-rich duricrusts, often in the form of indurated bauxites. Generally the products of the accumulation of aluminium oxides within the zone of weathering. Cf. hardpan.

Alfisol (Alfisol)

See soil classification.

algae (alge)

Simple plants, without roots and leaves, many of microscopic size, and containing chlorophyll. They are the base of the food chain in aquatic environments and reproduce by forming spores. (Sing. alga.)

Algonkian (Algonkium)

A late Precambrian geological period. Cf. geological time scale.

Alisol (Alisol)

See soil classification.

alkali (alkalie)

Any substance capable of furnishing the hydroxyl ion (OH⁻) to its solution or other substances; a substance having marked basic properties in contrast to acid. The most important alkali metals (Group IA of the Periodic Table) in soil are sodium and potassium. Cf. alkali soil; alkaline soil.

alkali feldspar (alkaliese veldspaat)

See feldspar group.

alkaline soil (alkaliese grond)

A soil with pH > 7,0. See soil reaction; soil pH.

alkali soil (brakgrond)

A more or less obsolete term, now replaced by the term salt-affected soil. Cf. salt-affected soil; saline soil; sodic soil; saline-sodic soil.

alley cropping (laanverbouing)

Planting of crops in strips with rows of trees or shrubs on each side. Cf. strip cropping.

allitic soil (allitese grond)

A soil from which silica has been removed, leaving a dominance of aluminium and iron compounds in the clay fraction. Syn. Oxisol; Latosol.

allochthonous (allochtoon)

Formed or produced elsewhere than in its present place; not formed *in situ*. Cf. autochthonous.

allogenic (allogeen)

Generated elsewhere. Said of constituents that came into existence outside of, and previous to, the rock of which they now form a part. Etymol. Greek *allos*, other. Cf. authigenic.

allophane (allofaan)

A co-precipitate of silica and alumina which contains water, exchangeable ions and frequently iron and organic matter as impurities. Amorphous to X-rays, it is the major constituent of the colloidal fraction in certain soils derived from volcanic ejecta and basic igneous rocks, and occurs to some extent in all soils. The composition and properties of allophane are variable, and naturally occurring allophanes of soils are difficult to isolate and study.

allotropic (allotropies)

Capable of existing in two or more forms, for example carbon as diamond and graphite.

alluvial cone (alluviale kegel)

An alluvial fan with very steep slopes; it is generally higher and narrower than a fan, and is composed of coarser and thicker material believed to have been deposited by

larger streams. The term is sometimes used synonymously with alluvial fan. Syn. cone of dejection; cone of detritus; hemicone; debris cone; cone delta; dry delta; wash.

alluvial fan (puinwaaier)

A sloping, fan-shaped mass of sediment deposited by a stream where it merges from upland onto a plain.

alluvial plain (alluviale vlakte)

A level or sloping tract or a slightly undulating land surface produced by extensive deposition of alluvium, usually adjacent to a river that periodically overflows its banks; it may be situated on a flood plain, a delta, or an alluvial fan. Syn. wash plain; waste plain; river plain; aggraded valley plain.

alluvial soil (alluviale grond)

A soil developing from recently deposited alluvium and exhibiting essentially no horizon development. Cf. alluvium.

alluvial terrace (alluviale terras)

A river terrace composed of alluvium and marking a former higher level of stream deposition.

alluvium (alluvium)

Unconsolidated materials deposited in close proximity to streams and rivers through the agency of running water.

Alpine Meadow Soil (obsolete) (Alpe-weidinggrond (verouderd))

A great soil group of the intrazonal order, comprised of dark soils of grassy meadows at altitudes above the timberline.

alumina (alumina)

Aluminium oxide, Al_2O_3 .

alumina sheet (aluminaplaat)

A sheet of aluminium hydroxyl octahedrons in the layers of silicate clay minerals. Cf. aluminium hydroxyl octahedron.

aluminium hydroxyl octahedron (aluminium hidroksieloktaëder)

One of the basic structural units of silicate clay minerals, consisting of an aluminium atom surrounded by six hydroxyl groups and having an octahedral configuration.

aluminium toxicity (aluminium toksisiteit)

Refers to the poor growth of certain plants as a result of high Al concentrations in soil. This phenomenon is the result of a very low soil pH which leads to an increase in the solubility of Al compounds in soil.

aluminosilicate clay mineral (aluminosilikaat kleimineraal)

See clay mineral.

amelioration, soil (grondverbetering)

See soil amendment.

amendment, soil (grondverbeteringsmiddel)

See soil amendment.

amethyst (amethyst)

A purple or bluish-violet variety of quartz.

ammonia liquid (vloeibare ammoniak)

Liquid ammonia which is kept under pressure and applied into the soil with special equipment.

ammonia solution (ammoniakoplossing)

Ammonia gas may be dissolved in water, yielding NH_4OH , which is known as ammonia solution; may be used as a fertilizer.

ammoniated superphosphate (geammonifiseerde superfosfaat)

Ammoniated superphosphate fertilizers are prepared by reacting anhydrous or aqua ammonia (NH_3) with any of the superphosphates. The free acid is neutralized and a small portion of the monocalcium phosphate is converted to the less soluble dicalcium phosphate, while ammonium salts are formed. Ammoniated (single) superphosphate contains approximately 2,5% N and 8,1% P, while ammoniated double superphosphate contains approximately 5,6% N and 18,3% P.

ammonia volatilisation (ammoniakvervlugting)

Loss of ammonia from a soil due to a high concentration in an alkaline soil.

ammonification (ammonifikasie)

The biochemical process whereby ammoniacal nitrogen is released from nitrogen-containing organic compounds.

ammonium fixation (ammoniumvaslegging)

The sorption of ammonium ions by inorganic or organic colloids of the soil in such a manner that they are unexchangeable by the usual methods of cation exchange.

ammonium nitrate (ammoniumnitraat)

Fertilizer NH_4NO_3 contains 32 to 33,5% N, has good handling properties but is slightly hygroscopic and may form explosive mixtures with certain organic compounds. Limestone ammonium nitrate (LAN) contains about 20% N and differs from ammonium nitrate only in that the particles are covered with finely ground limestone.

ammonium phosphate (ammoniumfosfaat)

Ammonium phosphate fertilizers are produced by reacting ammonia (NH_3) with phosphoric acid or a mixture of phosphoric and sulphuric acids. Monoammonium phosphate (MAP) and diammonium phosphate (DAP) are prepared in this way. The N and P contents depend on the fertilizer grade; pure MAP would contain 12% N and 26% P, and pure DAP 21% N and 23% P.

ammonium sulphate (ammoniumsulfaat)

Ammonium sulphate fertilizer ($(\text{NH}_4)_2\text{SO}_4$) is prepared by reaction of NH_3 with the appropriate quantity of H_2SO_4 . It contains approximately 21% N.

amorphous compound (amorfe verbinding)

This term is commonly used in soil science for compounds of aluminium, silicon and iron, amorphous to X-rays, highly reactive and believed to be largely responsible for the fixation of compounds of, for example, phosphorus and molybdenum, and for the high buffer capacity of soils in which they occur. Cf. allophane.

amphibole (amfibool)

The amphiboles are a group of ferromagnesian silicate minerals with a cross-linked double chain of tetrahedra with a Si:O ratio of 4:11. They are common in plutonic igneous and metamorphic rocks. Some have little or no Ca and Mg, in some Ca>Na and in others Na>Ca. Hornblende, a widespread member, has the general formula: $(Ca,Na)_3(Mg,Fe^{2+},Al,Ti)_5(Si,Al)_8O_{22}(OH,F)_2$.

amphibolite (amfiboliet)

A metamorphic rock consisting mainly of amphibole and plagioclase, with little or no quartz.

amygdale (amandel; amandelsteen)

A gas cavity in extrusive and occasionally intrusive rocks which is filled with secondary minerals such as zeolites, calcite, chalcedony or quartz.

anaerobic (anaërobies)

- (1) A condition indicating the absence of molecular oxygen.
- (2) The growth of organisms in the absence of molecular oxygen (such as anaerobic bacteria).
- (3) A process occurring in the absence of molecular oxygen (e.g. a biochemical process). Cf. aerobic; anoxic.

analytic model (analitiese model)

See mathematical model.

anatase (anataas)

Titanium oxide, TiO_2 (tetragonal); brown to black, trimorphous with rutile.

andesine (andesien)

See feldspar group.

andesite (andesiet)

A dark-coloured, fine-grained extrusive rock that, when porphyritic, contains phenocrysts composed primarily of zoned acid plagioclase (esp. andesine) in the range of An_{35} to An_{70} and one or more of the mafic minerals (e.g. biotite, hornblende, pyroxene), and a groundmass composed generally of the same minerals as the phenocrysts, although the plagioclase may be more acid and quartz is generally present. The extrusive equivalent of diorite. Its name is derived from the Andes mountains, South America.

andic horizon (andiese horison)

See diagnostic horizon.

Andisol (Andisol)

See soil classification.

Andosol (Andosol)

See soil classification.

angle of repose (rushoek)

The angle between the horizontal and the maximum slope that a soil (soil landscape) obtains through natural processes.

angular structure (hoekige structuur)

See soil structure.

anhydrite (anhydriet)

A mineral consisting of an anhydrous calcium sulphate: CaSO_4 . It represents gypsum without its water of crystallization.

anion (anioon)

A negatively charged ion. Those commonly occurring in soil include chloride (Cl^-), molybdate (MoO_4^-), phosphate (H_2PO_4^- , HPO_4^- , $\text{PO}_4^{=}$), sulphate (SO_4^-), nitrate (NO_3^-), carbonate (CO_3^-), bicarbonate (HCO_3^-) and the hydroxyl ion (OH^-). Cf. cation.

anion exchange capacity (AEC) (anioonuitruilkapasiteit (AUK))

Certain clay-size components (both inorganic and organic) in soils possess a positive electrical charge which is balanced by anions so that the system as a whole is electrically neutral (see cation exchange capacity). The anions so held represent a definite quantity known as the anion exchange capacity which may be expressed on a whole soil basis or on a clay basis using the unit cmol/kg . Because many soils have a pH-dependent positive charge (the lower the pH the higher the charge) it is important to choose the pH at which the AEC is measured so as to serve the specific objective and then to quote this pH when presenting the results. Cf. cation exchange capacity.

anion exclusion (anioonuitsluiting)

The exclusion or repulsion of anions in close proximity of soil particle surfaces because of their negative charge; also referred to as negative adsorption.

anisotropic soil (anisotropiese grond)

See anisotropy.

anisotropy (anisotropie)

Anisotropy implies that the spatial variation of the properties of a body is not uniform but varies in a specific direction. Soils are anisotropic, especially with regard to properties such as hydraulic conductivity and micromorphology.

annelids (annelide; ringwurms)

Segmented coelomate worms, commonly called ringworms, having a soft elongated body with a muscular body wall, divided into many similar segments. The main classes of Annelida are Polychaeta (ragworms, lugworms), Oligochaeta (e.g. earthworms) and Hiradinea (leeches).

anorthite (anortiet)

The calcium-feldspar end-member in the plagioclase series. A whitish grey or reddish triclinic mineral of the plagioclase feldspar group; $\text{CaAl}_2\text{Si}_2\text{O}_8$. It is the most basic

member of the plagioclases, its composition ranging from $Ab_{10}An_{90}$ to Ab_0An_{100} . Anorthite occurs in basic and ultrabasic igneous rocks (gabbro, norite, anorthosite), sometimes in tuffs, and very rarely in metamorphic rocks. Syn. calcium feldspar. Cf. feldspar group.

anorthoclase (anortoklaas)

See feldspar group.

anoxic (anoksies)

Devoid of molecular oxygen. Cf. anaerobic.

antagonism (antagonisme)

In plant nutrition it refers to the reduction in uptake of a particular ion due to the presence of one or more, usually chemically related, ions. However, in some cases at certain concentration ranges synergism (increased uptake) instead of antagonism may be observed. Cf. competition (ions).

anthric horizon (antriese horison)

See diagnostic horizon.

anthropic (antropies)

In the context of soil science, this term refers to soil material with properties caused by continued use by man.

anthropic epipedon (antropiese epipedon)

See diagnostic horizon.

anthropomorphic soil (antropomorfe grond)

An intrazonal soil that has been formed as a direct result of man's activities (e.g. a paddy soil). Cf. diagnostic horizon: plaggen epipedon. Syn. anthropic soil.

Anthrosol (Antrosol)

See soil classification.

antigorite (antigriet)

A platy or lamellar, brownish-green mineral of the serpentine group: $Mg_3Si_2O_5(OH)_4$. Syn. picrolite; baltimorite.

apatite (apatiet)

A group of variously coloured hexagonal minerals consisting of calcium phosphate together with fluorine, chlorine, hydroxyl, or carbonate in varying amounts and having the general formula:

$[Ca_3(PO_4)_2]_3.Ca[CO_3,Cl_2,F_2,(OH)_2]$. Also any mineral of the apatite group, such as fluorapatite, chlorapatite, hydroxylapatite, carbonate-apatite, and francolite; when not specified the term usually refers to fluorapatite. The apatite minerals occur as accessory minerals in almost all igneous rocks, in metamorphic rocks, and in veins and other ore deposits, and most commonly as fine grained and often impure masses as the chief constituent of phosphate rock and of bones and teeth. Cf. rock phosphate.

apedal (apedaal)

See soil structure; micromorphology.

Ap horizon (Ap-horison)

The surface layer of a soil disturbed by cultivation or pasturing. Cf. topsoil.

application efficiency (toedieningsdoeltreffendheid)

The application efficiency of irrigation water is the percentage water delivered to the field which becomes stored in the root zone and is thus available for crop use. Cf. irrigation efficiency; transmission efficiency; distribution efficiency; replenishment efficiency.

apron (skort)

A floor or lining to protect a surface from erosion; for example, the pavement (stones, brick or concrete) below chutes, spillways, or at the toes of dams.

aquic (akwies)

A soil water regime that is virtually free of dissolved oxygen because a soil zone is saturated by groundwater or water of the capillary fringe. It implies a reducing condition for at least a few days and a soil temperature above 5°C while the soil is saturated.

aquifer (waterdraer; akwifeer)

A body of rock or sediments that contains sufficient saturated permeable material to conduct groundwater and to yield economically significant quantities of groundwater to boreholes, wells and springs. Syn. groundwater reservoir; aquafer.

arable land (bewerkbare land)

Land so located that production of cultivated crops is economical and practical.

arable soil (bewerkbare grond)

Soil that can produce crops requiring tillage without clearing or other physical improvements.

aragonite (aragoniet)

CaCO₃, orthorombic, dimorphous with calcite.

Archaean (Argeïes)

In general usage syn. with Pre-Cambrian; refers to the oldest rocks. Cf. geological time scale.

arenaceous (sandig)

Containing mainly sand-size fragments. Not to be confused with siliceous.

Arenosol (Arenosol)

See soil classification.

argillaceous (kleihoudend)

Refers to sedimentary rocks and deposits composed of very fine-grained material, such as clay, shale, etc.

argic horizon (argiese horison)

See diagnostic horizon.

argillaan (argillaan)

See clay film; micromorphology.

argillic B horizon (obsolete) (argilliese B-horison (verouderd))

See diagnostic horizon.

argillic horizon (argilliese horison)

See diagnostic horizon.

Aridisol (Aridisol)

See soil classification.

arkose (arkose)

A coarse-grained sandstone or grit derived from the rapid disintegration of granite or gneiss and characterized by feldspar fragments.

arthropods (geleedpotiges)

Small segmented animals with heads, jointed legs and a thickened chitinous cuticle forming an exoskeleton. Examples: crabs, shrimps, insects, spiders, scorpions and mites.

aspect (aspek)

A compass direction toward which a land slope faces. The direction is taken downslope and normal to the contours of elevation.

assimilation (assimilasie)

- (1) The utilization of inorganic and/or organic substances in all synthesis. Absorption or building up of simple foodstuffs, or products of digestion of food-stuffs, into complex constituents of the organism.
- (2) In water pollution, the ability of a body of water to purify itself of organic pollution.

association, soil (assosiasie, grond-)

See soil association.

attapulgit (attapulgië)

See palygorskite.

Atterberg limits (Atterberggrense)

Also termed the Atterberg consistence constants, they are a series of water contents and related indices used to characterize soil plasticity.

liquid limit (LL) - The water content at which a soil is practically liquid but possesses a certain small shearing strength. It is the water content at which a trapezoidal groove of specified shape cut in moist soil held in a special cup is closed after 25 taps on a hard rubber plate. Syn. upper plastic limit.

plastic limit (PL) - The smallest water content at which a soil is plastic. It is obtained by rolling out samples at slowly decreasing water content until that water content is

reached at which a thread 3 mm in diameter just begins to crumble. Syn. lower plastic limit.

shrinkage limit (SL) - The smallest water content that can occur in a soil sample which is completely saturated. It is determined by measuring the water content of a sample at the point where, upon continuous drying, there is no further change in bulk volume.

plasticity index (PI) - A measure of plastic behaviour and is the range of water content between the liquid and plastic limits ($PI = LL - PL$). Sometimes referred to as the plasticity number.

flow index (I_f) - The relationship between the change in water content and the corresponding change in the shearing strength. It is determined from a flow curve by using the liquid limit apparatus.

shrinkage index (I_s) - The numerical difference between the plastic and shrinkage limits ($I_s = PL - SL$).

toughness index (I_t) - The ratio between the plasticity and flow indices ($I_t = PI/I_f$).

auger (boor; grondboor)

A tool for boring into the soil and withdrawing a small sample for field or laboratory observation. The most common soil augers are (i) those with worm-type bits, unenclosed, or (ii) those with worm-type bits enclosed in a hollow cylinder.

augite (ougiet)

A common mineral of the clinopyroxene group:

$(Ca,Na)(Mg,Fe^{2+},Al)(Si,Al)_2O_6$. It may contain titanium and ferric iron. Augite is usually black, greenish black or dark green and commonly occurs as an essential constituent in many basic igneous rocks and in certain metamorphic rocks. Cf. pyroxene.

autecology (outekologie)

The study of individual organisms or species within an ecosystem. Cf. synecology.

authigenic (outigenies)

Formed or generated in place. Applied to those constituents that came into existence with or after the formation of the rock of which they constitute a part, e.g. the cements of sedimentary rocks. Cf. allogenic.

autochthonous (outochtoon)

- (1) Indigenous, native, aboriginal - used especially for fauna and flora. Autochthonous flora refers to that portion of the microflora that subsist on the more resistant soil organic matter and is little affected by the addition of fresh organic materials. Cf. zymogenous flora.
- (2) In the case of soils and rocks, formed or occurring in the place where found; not imported; indigenous to a region.

automorphic (outomorf)

As opposed to hydromorphic (excessive water), it refers to soil-forming processes under a more or less well-drained regime.

autotroph (outotroof)

An organism capable of utilizing carbon dioxide as a source of carbon and of obtaining energy for the reduction of carbon dioxide, and for other life processes, from the oxidation of inorganic elements or compounds, e.g. sulphur, hydrogen, ammonium, and nitrite salts (chemo-autotrophic) or from light (photo-autotrophic). Cf. heterotroph.

available plant nutrient (beskikbare plantvoedingstof)

Any nutrient element or compound in the soil that can be absorbed readily and assimilated by growing plants.

available water (beskikbare water)

See soil water: available water.

available water capacity (AWC) (beskikbare waterhouvermoë (BWV))

It is that part of the water which can be held by soil and that is readily absorbed by plant roots. In soils with a low soluble salt content it is conventionally taken to be the difference between field capacity and wilting point. However, all such water is not equally available: as the soil water content decreases, its matric potential also decreases and more energy is needed to transport water into the root. Available water capacity is commonly expressed as a percentage of the dry mass of soil or as mm water per metre depth of soil. Cf. soil water: profile available water capacity; soil water: total available water capacity.

azonal soil (asonale grond)

Soils without distinct genetic horizons. An earlier soil order.

Azotobacter (Azotobacter)

A genus of aerobic, free-living bacteria capable of utilizing gaseous dinitrogen as a source of nitrogen.

B

B horizon (B-horison)

See soil horizon.

BC soil (BC-grond)

A truncated soil with B and C horizons but with little or no A horizon.

backfill (terugvulling)

The material used to refill a ditch or other excavation, or the process of doing so.

bacteria (bakterieë)

Single-cell, microscopic organisms that possess rigid cell walls. They may be aerobic, anaerobic, or facultative; they can cause disease, and are important in the decomposition of organic matter in soil.

badland (dongaveld; gramadoelas)

A land type generally devoid of vegetation and broken by an intricate maze of narrow ravines, sharp crests, and pinnacles resulting from serious erosion of soil and soft geologic materials. Most common in arid or semi-arid regions. A miscellaneous land type.

bajada (bajada; bahada)

The nearly flat surface of alluvium along the foot of a mountain; surface of confluent alluvial fans. Also spelled bahada.

ball clay (balklei)

A highly plastic, sometimes refractory clay, commonly characterized by the presence of organic matter, having unfired colours ranging from light buff to various shades of grey, and used as a bonding constituent of ceramic wares; pipe clay. It has wet and dry strength, a long vitrification range, and high firing shrinkage. Ball clay is so named because of the early English practice of rolling the clay into balls weighing about 13-22 kg and having diameters of about 25 cm.

banded ironstone (gestreepte ystersteen)

A sedimentary rock consisting of alternating iron-rich and iron-poor layers with an average thickness of 5 mm. The iron-rich layers consist of iron oxides such as magnetite and is dark-coloured. The iron-poor layers consist mainly of chert and are lighter in colour. Crocidolite-asbestos is present as metamorphic material between the layers.

banding (fertilizer) (bandplaas (misstof))

The application of fertilizer in a band near the seed, during planting of row crops.

bar (obsolete) (bar (verouderd))

A unit of pressure equal to 1,01325 standard atmosphere or 10^5 Pa. The pascal is the SI unit of pressure and is equal to a force of one newton per square metre (N/m^2).

barchan dune (barkaanduin)

A moving dune, crescentic in shape, with horns pointing in the direction of wind movement.

basalt (basalt)

A dark to medium-dark coloured, commonly extrusive (locally intrusive, as dikes), mafic igneous rock composed chiefly of calcic plagioclase (usually labradorite) and clinopyroxene in a glassy or fine-grained groundmass; the extrusive equivalent of gabbro. Nepheline, olivine, hypersthene and quartz may be present, but not all simultaneously; Nepheline and olivine can occur together, as can olivine and hypersthene and hypersthene and quartz, with other combinations not occurring. Apatite and magnetite are common accessories.

base course (kroonlaag)

In roadbuilding, a layer of specified or selected material of planned thickness constructed on the subgrade or subbase for the purpose of serving one or more functions such as distributing load, providing drainage, minimizing frost action, etc.

base flow (basisvloei)

The normal stream flow of a river as maintained by groundwater inflow.

base level of erosion (erosiebasisvlak)

The theoretical limit toward which erosion constantly tends to reduce the land. Sea level is the general base level, but in the reduction of the land there may be many temporary base levels which, for the time being, the streams cannot reduce. These temporary base levels may be controlled by the level of a lake or river into which the stream flows or by a particularly resistant stratum of rock that the stream has difficulty in removing.

base line (basislyn)

A surveyed line on the Earth's surface or in space, whose exact length and position have been accurately determined with more than usual care, and that serves as the origin for computing the distance and relative positions of remote points and objects or that is used as a reference to which surveys are co-ordinated and correlated.

base map (basiskaart)

A map showing certain basic data to which other information may be added; used inter alia in soil surveys.

basement rock (oergesteente; primitiewe gesteente)

- (1) A complex of undifferentiated rocks that underlies the oldest identifiable rocks in the area.
- (2) The crust of the earth below sedimentary deposits, extending downward to the Mohorovicic discontinuity. In many places the rocks of the complex are igneous and metamorphic and of Precambrian age, but in some places they are Paleozoic, Mesozoic, or even Cenozoic. Syn. basal complex; fundamental complex; basement complex. Cf. geological time scale.

base saturation percentage (basisversadigingspersentasie)

The sum of exchangeable Ca, Mg, Na and K ions expressed as a percentage of the total cation exchange capacity at a specified pH. Cf. S-value.

base status (basisstatus)

A qualitative expression of base saturation. Cf. base saturation percentage; dystrophic; mesotrophic; eutrophic; S-value.

basic rock (basiese gesteente)

A loosely used term for a quartz-free igneous rock, with more than 45% basic oxides (aluminium, iron, calcium, sodium, magnesium, potassium); e.g. basalt, dolerite, norite and gabbro.

basic slag (slakmeel)

Ground slag, rich in phosphorous, produced as a by-product of the steel industry.

basin (bekken)

- (1) In hydrology, the area drained by a river.
- (2) In irrigation, a level plot or field, surrounded by dikes, which may be flood-irrigated.

basin irrigation (kombesproeiing)

See irrigation methods.

bauxite (bauxiet; bouksiet)

An off-white, greyish, brown, yellow, or reddish-brown rock composed of a mixture of various hydrous aluminium oxides and aluminium hydroxides (principally gibbsite, some boehmite), and containing impurities in the form of titanium oxide, iron hydroxides, and quartz.

bearing capacity (dravermoë)

The load per unit of area which the soil can safely support without excessive yield.

bed load (vloervrag)

The part of the total stream load that is moved along the stream bed, such as the larger or heavier particles (boulders, pebbles, gravel) transported by traction or saltation along the bottom; the part of the load that is not continuously in suspension or solution. Also spelled : bedload. Syn. bottom load; traction load.

bedrock (vaste gesteente)

A general term for the rock, usually solid, that underlies soil or other unconsolidated, superficial material.

beidellite (beidelliet)

See smectite.

bench (bank)

See terrace.

benchmark soil (verwysingsgrond)

A soil for which data have been obtained and are used as reference values for various applications.

benthic (benties)

Pertaining to plants, animals and other organisms that inhabit the floors of lakes, seas and oceans.

bentonite (bentoniet)

A clay deposit largely composed of montmorillonitic clay minerals, produced by the alteration of volcanic ash *in situ*. Cf. smectite.

bidentate (bidentaant)

A ligand in which two atoms are bonded to the central atom of a complex. Cf. complex; monodentate.

binary exchange (binêre uitruiling)

Refers to an exchange reaction in which only two ions are involved. Cf. quaternary exchange; ternary exchange.

binding agent (bindmiddel; kitmiddel)

A mineral cement that is precipitated in the pore space between grains and that holds them together, or a primarily clay matrix that fills the interstices between grains.

biodegradable (bioafbreekbaar)

Refers to a substance of which the physical and chemical structure can be significantly broken down by micro-organisms.

biogeochemistry (biogeochemie)

The science concerned with the effects of living things on sub-surface geology; or with the distribution and fixation of chemical elements in the biosphere. It is also the study of the chemistry of organic sediments and of the chemical composition of fossils and fossil fuels.

biological control (biologiese beheer)

The control of a pest by its natural or introduced enemies.

biological crust (biologiese kors)

See soil crust.

biological oxygen demand (BOD) (biologiese suurstofbehoefte (BSB))

A measurement of the amount of organic pollution in water, measured as the amount of oxygen taken up from a sample containing a known amount of oxygen and kept at 20°C for 5 days. A low BOD indicates little pollution, while a high BOD indicates increased activity of heterotrophic microorganisms and thus heavy pollution.

biomass (biomassa)

- (1) The amount of living organisms in a particular area, stated in terms of the mass or volume of organisms per unit area or volume of the environment.
- (2) The mass of biologically derived material; it may be subdivided into living biomass and dead biomass.

biome (bioom)

A biome is a large, easily recognizable community unit formed by the interaction of regional climates with dominant regional biota and substrates. Its extent, in general, coincides with a distinctive type of soil. For example, the climax vegetation of the grassland biome is grass, although the dominant species of grass may vary in different parts of the biome.

biosphere (biosfeer)

- (1) The entire area occupied by living organisms, or favourable for their occupation. It includes parts of the lithosphere, pedosphere, hydrosphere, and atmosphere. Cf. ecosphere.
- (2) All living organisms of the earth and its atmosphere.

biosequence (soil) (bioreeks (grond))

A sequence of related soils that differ, one from the other, primarily because of differences in kinds and numbers of organisms as a soil-forming factor.

biota (biota)

A general term denoting all living matter.

biotic (bioties)

Of or pertaining to life or the mode of living of plants and animals collectively.

biotic factor (biotiese faktor)

In ecology, those environmental factors, distinct from physical and chemical factors, which are the result of living organisms and their activities, such as competition and predation.

biotite (biotiet)

See mica.

biotope (biotoop)

- (1) In ecology, an area of uniform ecology and biological adaptation. The habitat, or physical basis, of a uniform community of animals and plants adapted to its environmental conditions under which the existence of a given biocoenosis is possible. It is more or less ephemeral and at any moment it is circumscribed by a boundary that is subject to expansion, contraction, or other shift in position.
- (2) An association of organisms characteristic of a particular geographic area.

bioturbation (bioturbasie)

Mixing (turbation) of soil by organisms (biota).

biotype (biotipe)

A group of individuals occurring in nature, all with essentially the same genetic constitution. A species usually consists of many biotypes. Cf. habitat.

bird guano (voëlgvano)

See guano.

birnessite (birnessiet)

A manganese oxide with composition $MnO_{1.8}$.

Black Earth (Swartaarde)

A term used by some as synonymous with Chernozem, by others (e.g. in Australia) to describe self-mulching black clays. Cf. turf.

bleicherde (bleicherde; bleekaarde)

The light-coloured A2 horizon of Podzol soils.

blocky structure (blokstruktuur)

See soil structure.

boehmite (boehmiet)

A greyish, brownish, or reddish orthorhombic mineral : $\gamma\text{-AlO(OH)}$. It is a major constituent of some bauxites and it represents the gamma phase dimorphous with diaspore. Syn. böhmite.

bog (moeras)

See marsh; swamp.

bog iron ore (moerasystererts)

Impure ferruginous deposits developed in bogs or swamps by the chemical or biochemical oxidation of iron carried in solution.

Bog Soil (Moerasgrond; Veengrond)

A great soil group of the intrazonal order and hydromorphic suborder. Includes muck and peat.

border-strip irrigation (randstrookbesproeiing)

See irrigation methods.

bottomland (laagland)

See flood plain.

boulder (rotsblok)

A large individual fragment of rock, exceeding 200 mm (British Standards Inst.), or 256 mm (U.S. Wentworth Scale) in diameter.

boulder clay (gletserkeileem)

Unsorted, unstratified sediment carried or deposited directly by or under a glacier.

brack (brak)

Slightly salty, applied to water with a salt content that is intermediate between that of freshwater and seawater. Cf. salt-affected soil.

brack soil (brakgrond)

See salt-affected soil.

breccia (breksie)

A coarse-grained clastic rock composed of angular rock fragments. It differs from a conglomerate in that the fragments have sharp edges and unworn corners.

broadcast application (breedwerpige toediening)

The distribution of a fertilizer (or other chemical) over an entire area.

brookite (brookiet)

TiO_2 , orthorhombic, brown or reddish crystals. Trimorphous with rutile, anatase.

Brown Earth (Bruinaarde)

Soils with a mull horizon but having no horizon of accumulation of clay or sesquioxides. (Generally used as a synonym for "Brown Forest Soils" and sometimes for similar acid soils.)

Brown Forest Soil (Bruin Woudgrond)

A great soil group of the intrazonal order and calcimorphic suborder formed on calcium rich parent materials under deciduous forest and possessing a high base status but lacking a pronounced illuvial horizon. (A much narrower group than the European Brown Forest soil or Braunerde.)

Brown Podzolic Soil (Bruin Podzoliese Grond)

A zonal great soil group similar to Podzols but lacking the distinct A2 horizon characteristic of the Podzol group. (Some American soil taxonomists prefer to class this soil as a kind of Podzol and not as a distinct great soil group.)

Brown Soil (Bruingrond)

A great soil group of the temperate to cool arid regions, composed of soils with a brown surface and a light-coloured transitional subsurface horizon over an accumulation of calcium carbonate.

brucite (brusiet)

A hexagonal mineral : $Mg(OH)_2$. It commonly occurs in thin pearly folia and in fibrous form, as in serpentines and impure limestones.

Brunizem (Brunizem)

A zonal great soil group consisting of soils formed under temperate to cool-temperature, humid regions under tall grass. Syn. Prairie Soil.

brushite (brushiet)

Dicalciumphosphate dihydrate, $CaHPO_4 \cdot 2H_2O$.

bubbling pressure (air-entry pressure) (lugintreedruk)

See air-entry value.

buffer (soil) (buffer (grond))

A substance that acts chemically to resist changes in pH. The buffering action in soil is due mainly to clay and very fine organic matter. Highly weathered tropical clays are less active buffers than most less weathered silicate clays. Thus, with the same pH, more lime is required to neutralize (i) a clayey soil than a sandy soil, (ii) a soil rich in organic matter than one low in organic matter, or (iii) a soil with a high cation exchange capacity than one with a low cation exchange capacity.

buffer capacity (buffervermoë)

The ability of soil to resist an induced change in pH. Cf. amorphous compound.

bulk density (brutodigtheid; matriksdigtheid)

The mass of dry soil per unit bulk volume. The bulk volume is determined before drying to constant mass at 105°C. Values range roughly from 1000-1800 kg m⁻³, although higher values may be found in compacted soils.

bulk volume (brutovolume; matriksvolume)

The volume, including the solids and the pores, of an arbitrary soil mass.

buried soil (begraafde grond)

Soil covered by an alluvial, loessal, or other deposit. Cf. paleosol.

butte (spitskop)

A prominent, isolated, cliffed, erosional remnant in dry regions, usually bounded by talus slopes; often turret-shaped.

bypass flow (voorkeurvloei)

See preferential flow.

C

C horizon (C-horison)

See soil horizon.

cadastral (kadastraal)

Delineating or recording property boundaries, sometimes subdivision lines, buildings, and other details. Etymol. French cadastre, an official register of the real property of a political subdivision with details of area, ownership and value, and used in apportioning taxes.

Cainozoic (Kainosoïkum)

Syn. Cenozoic. See geological time scale.

calcan (kalkaan)

See micromorphology.

calcarenite (kalkareniet)

Limestone consisting predominantly of detrital calcite particles of sand size. Consolidated calcareous sand.

calcareous crust (kalkkors; kalkreet)

An indurated layer cemented by calcium carbonate. Cf. caliche; hardpan; diagnostic horizon: petrocalcic horizon.

calcareous soil (kalkgrond; kalkryke grond)

A soil with sufficient calcium carbonate or calcium-magnesium carbonate to effervesce visibly when treated with cold dilute hydrochloric acid.

calcic horizon (kalsiese horison)

See diagnostic horizon.

calcicole (kalkliefhebbend)

Any plant that thrives on lime-rich soils. Cf. calciphyte.

calcification (verkalking)

- (1) Deposition of calcium salts in living tissue.
- (2) Replacement of organic material by calcium salts (esp. CaCO_3) in fossilization.
- (3) See calcification, soil.

calcification, soil (verkalking, grond-)

The process or processes of soil formation in which the surface soil is kept supplied with calcium, or the process of accumulation of calcium in some horizon of the soil profile.

calcifuge (asidofiet; suurverdraend)

Any plant that thrives in acid soils. Cf. acidophyte.

calcination (kalsinering)

The heating of a substance to its temperature of dissociation, e.g. of limestone to CaO and CO₂ or of gypsum to lose its water of crystallization. Cf. calcined clay.

calcined clay (gekalsineerde klei)

Clay minerals, such as montmorillonite and attapulgite, that have been fired at high temperatures to obtain absorbent, stable, granular particles; generally used as amendments in soil modification. Cf. calcination.

calciphyte (kalsifiet)

A plant that requires or tolerates rather large amounts of calcium or is associated with soils rich in calcium. Syn. calcicole.

Calcisol (Kalsisol)

See soil classification.

calcite (kalsiet)

A common rock-forming mineral : CaCO₃. Calcite is usually white, colourless, or pale shades of grey, yellow, and blue; it has perfect rhombohedral cleavage, a vitreous lustre, a hardness of 3 on Mohs' scale, and it readily effervesces in cold dilute hydrochloric acid. It is the principal constituent of limestone; calcite also occurs in crystalline form in marble, loose and earthy in chalk, spongy in tufa, and stalactitic in cave deposits. It is commonly found as the cementing medium in clastic sedimentary rocks; it is also a minor secondary constituent in many igneous rocks. Calcite crystallizes in a great variety of forms, such as nailhead spar, dogtooth spar, and iceland spar. Cf. dolomite. Syn. calcespar.

calcium feldspar (kalsiumveldspaat)

See feldspar group of minerals.

calcrete (kalkreet)

See hardpan; calcareous crust.

caliche (caliche)

- (1) A soil layer near the surface, more or less cemented by secondary carbonates of calcium and/or magnesium precipitated from the soil solution. It may occur as a soft, thin soil layer, as a hard, thick bed just beneath the solum, or as a surface layer exposed by erosion. Not a geologic deposit. Cf. calcrete; hardpan.
- (2) Alluvium cemented with sodium nitrate, chloride, and/or other soluble salts in the nitrate deposits of Chile and Peru. Cf. hardpan; Chile-salpetre.

California bearing ratio (CBR) (Kaliforniese dravermoë (KDV))

A measure of the relative resistance of a soil to penetration under controlled conditions of density and water content. It is the ratio of the load required for the penetration of a standard rod or piston to a specified depth (usually 2,5 mm or 5,0 mm) into a soil sample (or soil *in situ*), to the load required for corresponding penetration of a standard material (crushed-rock base material) whose resistance under standardized conditions is well established. The CBR is expressed as a percentage.

cambic B horizon (obsolete) (kambiese B-horison (verouderd))

See diagnostic horizon.

cambic horizon (kambiese horison)

See diagnostic horizon.

Cambisol (Kambisol)

See soil classification.

Cambrian (Kambrium)

See geological time scale.

canal (kanaal)

A constructed open channel for transporting water from the source of supply to the point of distribution.

canyon (canyon; ravyn)

A deep, steep-sided gorge with a river at the bottom; mainly found in arid or semi-arid areas, where a rapidly eroding river flows.

capability, land (landvermoë)

See land capability.

capillarity (kapillariteit)

- (1) The degree to which a material or object containing minute openings or passages, when immersed in a liquid, will draw the surface of the liquid above the level of zero hydrostatic pressure. Unless otherwise defined, the liquid is generally assumed to be water.
- (2) The phenomenon by which water is held in interstices above the normal level of zero hydrostatic pressure, due to attraction of the molecules in the walls of an interstice for the molecules of the water as well as the attraction of the molecules of water for one another.

capillary conductivity (kapillêre geleivermoë)

See soil water : hydraulic conductivity.

capillary flow (kapillêre vloei)

See soil water : unsaturated flow.

capillary fringe (kapillêre grenssone)

A zone just above the plane of zero hydrostatic pressure that remains saturated or nearly saturated. The extent can be inferred from the retentivity curve and air-entry pressure. Syn. zone of capillarity; capillary moisture zone; capillary zone.

capillary potential (kapillêre potensiaal)

See soil water : matric potential.

capillary pressure (kapillêre druk)

See soil water : matric pressure.

capillary water (obsolete) (kapillêre water (verouderd))

The water held in the "capillary" or small pores of a soil, usually with a negative pressure of less than -6 kPa.

capillary zone (kapillêre gebied; -sone)

The zone in which soil water is held by capillary forces. The interstices may be completely filled (saturation zone) or partly filled (aeration zone). Liquid pressures within this zone are less than atmospheric. Cf. capillary fringe.

carbon-14 dating (koolstof-14 datering)

See radiocarbon dating.

carbonaceous (koolstofhoudend)

Pertaining to or containing carbon derived from plant and animal residues.

carbon cycle (koolstofsiklus)

The sequence of transformations whereby carbon dioxide is fixed in living organisms by photosynthesis or by chemosynthesis, liberated by respiration and by the death and decomposition of the fixing organism, used by heterotrophic species, and ultimately returned to its original state.

Carboniferous (Karboon)

See geological time scale.

carbon-nitrogen ratio (koolstof-stikstofverhouding)

The ratio of the mass of organic carbon to the mass of total nitrogen (inorganic plus organic forms) in soil or organic matter.

carrier (draer)

A component of the cell membrane which can form a complex with ions outside the membrane, the complex being able to traverse the membrane and release the ion, which cannot traverse the membrane while not combined with the carrier, to the inner cell space.

carrier mechanism (draer-meganisme)

A mechanism of ion uptake and transport across membranes, impermeable to the ions, and based on the existence of carriers. Cf. carrier.

carrying capacity (drakrag; draervermoë)

The maximum number of animals an area can support during a specified period of time. Cf. grazing capacity.

cast (uitwerpsel)

In soil biology, something that is cast out or off, such as an earthworm cast or a faecal pellet.

cataphoresis (kataforese)

Electrophoresis in which the movement of suspended positive particles in a fluid is toward the cathode.

catchment (opvanggebied)

The specified area from which runoff water flows into a stream/streams or basin. Cf. watershed.

category, soil (kategorie, grond-)

See soil category.

catena (katena)

A sequence of soils of about the same age and derived from similar parent material. These soils occur under similar macroclimatic conditions, but have different characteristics due only to variation in topography and drainage. Cf. soil association.

cation (katioon)

A positively charged ion, for example Ca^{2+} , Mg^{2+} , K^+ , Na^+ , H^+ , Al^{3+} , NH_4^+ , and H_3O^+ . The term exchangeable metal cations ordinarily refers to calcium, magnesium, potassium and sodium. Cf. cation exchange capacity; anion.

cation exchange (katioonuitruiling)

The interchange between a cation in solution and another cation adsorbed on the surface of any surface-active material such as clay colloid or organic colloid. Cf. binary exchange; exchange constant; selectivity coefficient.

cation exchange capacity (CEC) (katioonuitruilkapasiteit (KUK))

The sum total of exchangeable cations that a soil can adsorb. This soil property is due to the negative electrical charge of the colloidal (both inorganic and organic) fraction of most soils. The negative charge is balanced by adsorbed cations so that the soil system as a whole is electrically neutral. The balancing cations represent a definite quantity referred to as the cation exchange capacity (CEC). The CEC is expressed in cmol_c/kg soil or cmol_c/kg clay (previously in milli-equivalents/100 g soil or clay; sometimes expressed as $\text{cmol}(+)/\text{kg}$ or $\text{cmol}(-)/\text{kg}$). The CEC is dependent on pH (usually CEC increases with pH) due to the release of protons from functional groups on the surfaces of organic matter, clay minerals and amorphous compounds. Cf. anion exchange capacity; base saturation percentage; S-value; T-value.

cemented (gesementeer; verkit)

Indurated; refers to an indurated soil material in which the individual particles are held together by cementing substances such as humus, calcium carbonate, or the oxides of silicon, iron, and aluminium. The material has a hard, brittle consistence which persists even when wet. Cf. nodule; fragipan; hardpan; induration.

cementing agent (kitmiddel; bindmiddel)

See binding agent.

Cenozoic (Senosoïkum)

See geological time scale.

centre-pivot irrigation (spilpuntbesproeiing)

See irrigation methods.

chalcedony (chalcedoon)

A cryptocrystalline variety of quartz. Commonly microscopically fibrous, translucent or semitransparent, a uniform tint, and white pale blue, gray brown or black colour. It has a lower density and lower indices of refraction than quartz. Syn. chalcedonite.

chalk (kryt; mergel)

A very soft usually white to light grey or buff porous, fine-textured limestone of marine origin. Composed mainly of the calcareous shells of various marine micro-organisms,

but whose matrix consists of fine particles of calcium carbonate, some of which may have been chemically precipitated. Cf. marl.

chamber (kamer)

See micromorphology.

channel (kanaal)

See micromorphology.

characteristic curve (waterretensiekromme)

See soil water: retentivity curve.

check-basin irrigation (ruitkombesproeiing)

See irrigation methods.

chelate (chelaat)

See chelation.

chelation (chelaatvorming)

A chemical process involving the formation of a heterocyclic ring compound which contains at least one metal cation (or hydrogen ion) in the ring. Cf. complex.

cheluviation (cheluviasie)

A term derived from the combination of chelation and eluviation; the removal of iron and aluminium as organic complexes (chelates) from the profile by acid percolating water (eluviation).

Chernozem (Chernozem)

A zonal great soil group consisting of soils with a thick, nearly black or black, organic matter-rich A horizon rich in exchangeable calcium, underlain by a lighter coloured transitional horizon above a zone of calcium carbonate accumulation; occurs in a cool subhumid climate under a vegetation of tall and midgrass prairie.

chert (chert)

A hard, extremely compact, dull to semivitreous cryptocrystalline rock, consisting dominantly of cryptocrystalline silica. See coarse fragments.

Chestnut Soil (Kastaiingbruingrond)

A zonal great soil group consisting of soils with a moderately thick, dark-brown A horizon over a lighter coloured horizon that is above a zone of calcium carbonate accumulation.

Chile saltpetre (Chili-salpeter)

A fertilizer containing mainly sodium nitrate, from Chilean origin; in earlier years the main nitrogen fertilizer. Cf. caliche.

china clay (porseleinaarde)

A commercial term for kaolin obtained from china clay rock after washing and suitable for use in the manufacture of chinaware. Sometimes spelled China clay.

chisel plough (beitelploeg)

A tillage implement used to shatter or loosen hard, compact layers, usually in the subsoil, to depths below normal plough depth. Cf. subsoiling; tillage systems.

chlorite (chloriet)

A clay mineral with structure similar to the smectites, but having an octahedral brucite or gibbsite layer situated between the 2:1 unit layers. It has negligible swelling properties.

chlorosis (chlorose)

A condition in plants resulting from a reduction of chlorophyll synthesis caused by a deficiency of an essential nutrient or other physiological disorder. Leaves of chlorotic plants range from light green through yellow to almost white.

chroma (chroma)

The relative purity, strength, or saturation of a colour, directly related to the dominance of the determining wavelength of the light and inversely related to greyness; one of the three variables of colour. Cf. soil colour; hue; value.

chronosequence (chronoreeks)

Two or more related soils that differ one from the other, in certain properties, primarily as a result of time as a soil-forming factor.

class, soil (grondklas)

See soil classification.

classification, soil (grondklassifikasie)

See soil classification.

clast (klast)

An individual constituent, grain or fragment of a sediment or sedimentary rock produced by the physical disintegration of a large rock mass.

clastic (klasties)

A term applied to rocks or sediments composed principally of fragmental material derived from pre-existing rocks.

clay (klei)

- (1) A soil separate consisting of particles < 0,002 mm in equivalent diameter; clay minerals, quartz and primary minerals may be found in this separate.
- (2) A soil texture class. See soil texture.
- (3) In engineering, a fine-grained soil that has a high plasticity index in relation to the liquid limit.

clay domain (kleidomein)

A group of clay crystals which are orientated and sufficiently close together for a group to behave in water as a single unit.

clayey (kleierig)

Containing large amounts of clay or having properties similar to those of clay.

clay film (kleifilm)

A thin coating of well-oriented clay particles on the surface of a soil aggregate, particle, or pore. Syn. clay skin; cutan.

clay-humus complex (klei-humus kompleks)

Associations of clay particles and humus or humic compounds, mainly through the mechanisms of polyvalent cation bonding, ligand exchange and London or van der Waals forces. Much of the humus in soil can be associated with clay in this way. The complex usually carries a net negative charge. Cf. exchange complex.

clay loam (kleileem)

See soil texture.

clay mineral (kleimineraal)

A naturally occurring crystalline compound of aluminium and silicon < 0,002 mm in equivalent diameter. The term is often used in a more general sense in relation to soil and sediments for a wide variety of crystalline and cryptocrystalline, clay-size inorganic materials, *inter alia* kaolinite, mica, the smectites, vermiculite, interstratified clay minerals, chlorite, amorphous compounds (of Fe, Al, Si) and the following crystalline oxides : gibbsite $\text{Al}(\text{OH})_3$; diaspore $\alpha\text{-AlOOH}$; boehmite $\gamma\text{-AlOOH}$; goethite $\alpha\text{-FeOOH}$; lepidocrocite $\gamma\text{-FeOOH}$; hematite $\alpha\text{-Fe}_2\text{O}_3$; maghemite $\gamma\text{-Fe}_2\text{O}_3$; quartz SiO_2 .

claypan (kleibank)

A horizon or layer that is considerably less permeable and more clayey than the material overlying it. Examples are the B horizons of duplex soils.

clay skin (kleihuid)

See cutan; clay film.

clean tillage (skoonbewerking)

See tillage systems.

cleavage (splyting)

The splitting or tendency of minerals to split along crystallographic planes. As applied to rocks, it is the property of splitting into thin parallel sheets which may be highly inclined to the bedding planes, as in slate and shale.

climax (klimaks)

A plant community of the most advanced type capable of development under and in dynamic equilibrium with the prevailing environment.

climosequence (klimaatreeks)

A sequence of related soils which differ from one another in certain properties primarily as a result of the effect of climate as a soil-forming factor.

clod (kluit)

A compact, coherent mass of soil ranging in size from 5 to 250 mm; produced artificially, usually by the activity of man by ploughing, digging, etc. especially when these operations are performed on soils that are either too wet or too dry for normal tillage operations.

coagulate (koaguleer)

The coalescence of particles in a suspension resulting in their settling out; often induced by polyvalent ions, or by increasing the salt content.

coarse fragments (growwe brokstukke)

Rock or mineral particles > 2,0 mm in diameter. The following names are used for coarse fragments in soils (Soil Survey Staff, 1951):

Fragments*		Descriptive terms applied to fragments that have:		
Shape	Material	Diameters < 75 mm	Diameters 75-250 mm	Diameters > 250 mm
rounded or subrounded	all kinds of rock	gravelly	cobbly	stone**
irregular and angular	(1) chert (2) other than chert	cherty angular gravelly	coarse cherty angular cobbly	stony stony
		Lengths < 150 mm	Lengths 150 - 375 mm	Lengths > 375 mm
thin and flat	(1) limestone sandstone or schist (2) slate (3) shale	channery slaty shaly	flaggy flaggy flaggy	stony stony stony

* The adjectives describing fragments are also applied to lands and soils when they have significant amounts of such fragments.

** "bouldery" is sometimes used when stones are larger than 600 mm.

coarse sand (grofsand)

See soil separates; soil texture.

coarse sand class (grofsandklas)

See soil texture.

coarse sandy loam (grofsandleem)

See soil texture.

coarse texture (growwe tekstuur)

The texture exhibited by sands, loamy sands and sandy loams; a soil containing large quantities of these textural classes. Cf. fine texture; medium texture; soil texture.

cobble (cobblestone) (keisteen; ronde klip)

See cobblestone.

cobblestone (keisteen)

Rounded or partially rounded rock or mineral fragments between 75 and 250 mm in diameter. Cf. coarse fragments.

coefficient of linear extensibility (cole) (koëffisiënt van lineêre uitsetting)

The ratio of the difference between the wet (-33 kPa water potential) length and the dry length of a clod, to its dry length.

coherent soil (saamklewende grond)

See soil structure.

cohesion (kohesie)

The attraction of a substance for itself; the mutual attraction among molecules or particles comprising a substance that allows it to cling together as a continuous mass.

cohesive soil (kohesiegrond; saamklewende grond)

Said of a soil that has relatively high shear strength when air-dried, and sticky when wet, e.g. a clayey soil.

COLE (koëffisiënt van lineêre uitsetting)

See coefficient of linear extensibility.

coliform (kolivorm)

A group of bacteria used as an indicator of sanitary quality in water. The total coliform group is an indicator of sanitary significance, because the organisms are normally present in large numbers in the intestinal tracts of humans and warm-blooded animals.

collapsible soil (swiggrond)

A soil with a low shear strength and thus with a tendency to collapse under applied pressure. Also a soil with a high content of swelling clay(s). Cf. smectite; swelling clay.

Collembola (Kollembole (Collembola))

The Collembola (soil fleas or springtails) is the most common soil-living insect order. It is one of the wingless insect orders. Some live in the deeper soil layers, but most types are found in the organic matter layer. The latter group have well-developed springtails. The Collembola feed on many various types of organic debris, e.g. dead and decomposing plant and animal material.

collimating mark (kollimasiemerk)

See fiducial mark.

colloid (kolloïed)

- (1) A substance in a state of fine subdivision with particles from about 0,0005 to 0,000001 mm equivalent diameter; when apparently dissolved in water, it diffuses very slowly or not at all through a semi-permeable membrane and usually has little effect on freezing point, boiling point, or osmotic pressure of the solution.
- (2) The term is used with reference to matter, both inorganic and organic, having very small particle size and a correspondingly high surface area per unit of mass. Many mineral colloids are crystalline. Etymol. Greek *kolla*, glue.

colluvial soil (kolluviale grond)

A soil developed on colluvium as parent material. Cf. colluvium.

colluvium (kolluvium)

An unconsolidated deposit of rock fragments and soil material accumulated at the base of slopes primarily as a result of gravitational action and to a lesser extent as a result of front action and local runoff. Cf. soil creep.

colour, soil (kleur, grond-)

See soil colour.

columnar structure (suilstruktuur; kolom-)

See soil structure.

compaction (verdigting)

A reduction in soil bulk volume (increase in bulk density and reduction of porosity) resulting from an applied force, such as that due to machinery and animals. Cf. soil compaction.

compaction test (verdigtingstoets)

A laboratory compacting procedure whereby a soil at a known water content is placed in a specified manner into a mould of given dimensions, subjected to a compaction effort of controlled magnitude, and the resulting bulk density determined. The procedure is repeated for various water contents sufficient to establish a relation between water content and bulk density.

competition (ions) (kompetisie (ione))

Refers to the effect of a particular plant nutrient ion on another with related chemical properties in the process of nutrient uptake by plants, as for example the effect of nitrate on phosphate uptake.

complementary-ion effect (komplementêre ioon-effek)

The exchangeability of a particular adsorbed ion is determined, amongst others, by the nature of the other exchangeable ions, i.e. the complementary ions, in the exchanger phase. In general the exchangeability of an ion decreases as the complementary ions are less strongly adsorbed. The same principle plays a role in the availability of exchangeable cations for plant uptake.

complex (kompleks)

In chemistry, a complex consists of a central group (such as an ion) in close association with other atoms or molecules. The latter are termed ligands. If two or more functional groups of a single ligand are coordinated to a metal cation in a complex, the complex is termed a chelate. Cf. inner-sphere complex; outer-sphere complex.

complex, soil (kompleks, grond-)

See soil complex.

compost (kompos)

Organic residues, or a mixture of organic residues and soil, that have been piled, wetted, and allowed to undergo biological decomposition. Mineral fertilizers are sometimes added. Used as a soil ameliorant and fertilizer.

compressibility (saamdrukbaarheid)

The ratio of the relative volume decrease to the corresponding increase in pressure of a soil undergoing compression. Compressibility is also the reciprocal of the bulk modulus.

compression (saamdrukking)

A system of forces or stresses that tends to decrease the volume of, or compact a soil, or the change of volume produced by such a system of forces.

compressive strength (saamdruksterkte)

The maximum compressive stress that can be applied to a soil, under given conditions, before failure occurs.

compressive stress (drukspanning)

The ratio of force applied to area, for a soil subjected to compression.

concordant (konkordant)

Applied to an igneous intrusion that has been emplaced parallel with the structure (bedding, foliation, etc.) of the invaded country rock. Sills are examples of concordant intrusions.

concretion (konkresie)

A nodule made up of concentric accretions. See nodule.

conductance (konduktansie)

- (1) The reciprocal of (electrical) resistance.
- (2) Hydraulic conductance is a term sometimes used when referring to hydraulic conductivity. Cf. soil water: hydraulic conductivity.

conduction (geleiding)

The transmission of energy through materials or of fluids through pipes or porous media. Cf. conductance; conductivity.

conductivity (konduktiwiteit; geleivermoë)

- (1) Also termed specific conductance, it is the conductance of a homogeneous unit cube of material. In general the conductivity is given by $\lambda = L/RA$, in which R is the resistance of a conductor of length L and cross-sectional area A. The SI unit of conductivity is S/m.
(Note : 100 mS/m = 1 millimho/cm.)
- (2) A measure of the ability of a material to conduct electricity, water, gases etc.
- (3) See soil water : hydraulic conductivity.
- (4) See electrical conductivity.

conformable (konkordant)

Applied to a sequence of strata deposited in an apparently continuous succession. Not the same as concordant. Cf. concordant.

conglomerate (konglomeraat)

A rock composed of rounded, waterworn pebbles, cemented in a matrix of sand, silt, clay, calcium carbonate, silica, iron oxide or mixtures of these. Cf. agglomerate; breccia.

conservation (bewaring)

The protection or improvement and use of natural resources according to principles that will assure their highest economic or social benefit, for some specified purpose.

conservation tillage (bewaringsbewerking)

A collective term for systems in which the soil is cultivated in such a way that ridges may form but crop residues and clods remain on the surface of the soil. Cf. tillage systems.

consistence, soil (konsistensie, grond-)

See soil consistence.

consociation (soil map unit) (konsosiasie (grondkaartenheid))

A soil map unit indicating an area that is occupied by a single taxonomic unit only.

consolidation, soil (konsolidasie, grond-)

Gradual or slow reduction in volume and increase in bulk density of a soil mass in response to increased load or compressive stress. Cf. compaction.

consumer (verbruiker)

A heterotrophic organism, mainly of the animal kingdom, that ingests other organisms or particulate organic matter.

consumptive water use (totale waterverbruik)

The water used by plants in transpiration and growth, plus water loss from adjacent soil or from intercepted precipitation in any specified time.

contact exchange (kontakuitruiling)

The process whereby ions on different exchanger surfaces exchange directly through the overlap of the respective diffuse double layers.

contour line (kontoerlyn)

A line connecting points of equal elevation on a map.

control (kontrole)

In research, an untreated or standard treatment of some variable, which is used as a basis for comparison against the results of other treatments.

controlled mosaic (gekontroleerde mosaïek)

See mosaic (photo); mosaic, controlled; mosaic, uncontrolled.

conversion factors (omrekeningsfaktore)

Concentration

me/100 g	=	cmol (+ or - charge) kg ⁻¹ or cmol _c /kg
me/100 g	=	(mg/kg (ppm))/(equivalent mass x 10)
1 me Ca ²⁺ /100 g	=	200,4 ppm = 5 mmol/kg = 401 kg/ha/150 mm (BD = 1 333 kg/m ³ , or 1,333 g/cm ³)
1 me Mg ²⁺ /100 g	=	121,5 ppm = 5 mmol/kg
	=	243 kg/ha per 150 mm depth
1 me Na ⁺ /100 g	=	230 ppm = 10 mmol/kg
	=	460 kg/ha per 150 mm depth

1 me K ⁺ /100 g	=	391 ppm = 10 mmol/kg
	=	782 kg/ha per 150 mm depth
1 ppm P	=	2,0 kg/ha per 150 mm depth
1 me Ca ²⁺ /l	=	20,0 ppm = 0,5 mmol/dm ³ (1 dm ³ = 1l)
1 me Mg ²⁺ /l	=	12,2 ppm = 0,5 mmol/dm ³
1 me Na ⁺ /l	=	23,0 ppm = 1,0 mmol/dm ³
1 me K ⁺ /l	=	39,1 ppm = 1,0 mmol/dm ³
1 me HCO ₃ ⁻ /l	=	61,0 ppm = 1,0 mmol/dm ³
1 me CO ₃ ⁼ /l	=	30,0 ppm = 0,5 mmol/dm ³
1 me SO ₄ ⁼ /l	=	48,0 ppm = 0,5 mmol/dm ³
1 me Cl ⁻ /l	=	35,4 ppm = 1,0 mmol/dm ³

Electrical conductivity

$$1 \text{ mS/m} = 1 \text{ mmho/m} = 0,01 \text{ mmho/cm} = 10 \text{ }\mu\text{mho/cm}$$

Pressure

$$1 \text{ kPa} = 0,01 \text{ bar} = 0,00987 \text{ atm} = 0,145 \text{ lb/in}^2 \\ = 0,102 \text{ m head of water}$$

Miscellaneous

1% organic carbon = 1,72% organic matter (approximately)

Area (ha) per cm² on a map = (map scale)²/10⁸

1 ha soil 150 mm deep has mass 2 x 10⁶ kg at bulk density

1 333 kg/m³ or 1,333 g/cm³.

co-ordination number (koördinasiegetal)

The number of ions that can be packed around a central ion, which depends on the ratio of radii of the two ions. In clay minerals the Si⁴⁺ cation occurs in fourfold or tetrahedral co-ordination and Al³⁺ usually in sixfold or octahedral co-ordination and sometimes in tetrahedral co-ordination.

correlation (korrelasie)

See soil correlation.

corrugation irrigation (riffelbesproeiing)

See irrigation methods.

counter ions (teenione)

The surface accumulation of ions of opposite charge on the surface of a particle carrying a net positive or negative charge. Also termed gegenions (from German literature).

covariant properties (kovariërende eienskappe)

Certain properties vary consistently with one another and hence it is unnecessary to specify all such covariant properties in the definition of a class (e.g. a soil series) - one is sufficient and the others apply automatically; e.g. a horizon with free lime automatically has a pH value above 7 and an exchange complex fully saturated with metal cations.

coverage (photo) (fotodekking)

Aerial photographs taken with sufficient overlap to permit stereoscopic examination in the overlap area, usually 60% in line of flight and 30% in adjoining flights.

cover crop (dekgewas)

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

cradle knoll (hobbel)

A small knoll formed by earth that is raised and left when a tree is uprooted (a microrelief term).

creep (kruip)

See soil creep.

Cretaceous (Kryt)

See geological time scale

critical hydraulic gradient (kritiese hidrouliese gradiënt)

In a cohesionless soil, that hydraulic gradient at which matric pressure is reduced to zero by the upward flow of water.

critical slope (kritiese helling)

- (1) In hydraulics, that slope that will sustain a given discharge at uniform, critical depth in a given channel.
- (2) In soils, see angle of repose.

crotovine (krotovien; krotovina)

A former animal burrow in a soil horizon that has been filled with organic matter or material from another horizon, or with material from the same horizon but with an altered structure. Also known as a pedotubule; also spelled krotovina or crotovina.

crumb (krummel)

A soft, porous, more or less rounded ped from one to five millimetres in diameter. See soil structure.

crust (kors)

See soil crust.

crust (earth) (aardkors)

The thin outermost solid layer of the Earth. It varies in thickness from approximately 5 km beneath the oceans to approximately 60 km beneath mountain chains. Cf. mantle; soil.

cryic (kriogenies)

See soil temperature.

Cryosol (Kriosol)

See soil classification.

cryptocrystalline (kriptokristallyn)

Crystalline, but so fine-grained that the individual components cannot be seen with an ordinary microscope.

crystal (kristal)

A homogeneous inorganic substance of definite chemical composition bounded by plane surfaces that form definite angles with each other, thus giving the substance a regular geometrical form. Cf. soil mineral.

crystal lattice (kristaltralie)

The three-dimensional, regularly repeating atomic arrangement of a crystal, each point of which has identical surroundings. The lattice is built by the regular, parallel translations in space of the unit cell. There are fourteen possible lattice patterns.

crystalline rock (kristallyne gesteente)

A rock consisting of various minerals that have crystallized in place from magma. Cf. igneous rock.

crystallographic axis (kristallografiese as)

One of three (four in a hexagonal crystal) imaginary lines in a crystal that pass through its centre; it is used as a reference in describing crystal structure and symmetry. One or all of the crystallographic axes may coincide with axes of symmetry. Syn. crystal axis.

crystal structure (kristalstruktuur)

The regular, orderly, and repeated arrangement of atoms in a crystal, described by the crystal lattice or space lattice. Syn. crystalline structure.

crystal system (kristalsistiem)

One of six groups or classifications of a crystal according to the symmetry of its crystal faces, and having characteristic dimensional equivalences in the lattices or axes of reference. The systems are: isometric, hexagonal, tetragonal, orthorhombic, monoclinic, and triclinic. Within the six systems there are a total of 32 crystal classes.

cuesta (cuesta)

A long low ridge with a steep scarp slope and a gentle back slope, formed by the differential erosion of strata of differing hardness. Etymol. Spanish from Latin *costa*, side; rib.

cultivar (kultivar)

An assemblage of cultivated plants which is clearly distinguished by its characteristics (morphological, physiological, cytological, chemical, or others) and which when reproduced (sexually or asexually), retains those distinguishing characteristics.

cultivate (bework)

See till; tillage.

cumulative infiltration (kumulatiewe infiltrasie)

See soil water : cumulative infiltration.

cutan (kutaan)

Cutans occur on the surface of peds or individual particles (sand grains, stones). They consist of material which is usually finer than and that has an organisation different to the material that makes up the surface on which they occur. They originate through deposition, diffusion or stress. Syn. clay film; clay skin. Cf. micromorphology.

cutoff (afsnyding)

- (1) A wall, collar, or other structure, such as a trench, filled with relatively impervious material intended to reduce seepage of water through porous strata.
- (2) In river hydraulics, the new and shorter channel formed either naturally or artificially when a stream cuts through the neck of a band, e.g. cutoff drain. Cf. interceptor drain.
- (3) In flood irrigation, cutoff time of the water supply or cutoff position of the advance front.

cyclosilicate (siklosilikaat)

A class or structural type of silicate characterised by the linkage of the SiO_4 tetrahedra in rings, with a ratio of $\text{Si}:\text{O} = 1:3$. An example of a cyclosilicate is beryl, $\text{BeAl}_2(\text{Si}_6\text{O}_{18})$. Cf. nesosilicate; sorosilicate; inosilicate; phyllosilicate; tectosilicate. Syn. ring silicate.