

REGOSOLS (RG)

The Reference Soil Group of the Regosols is a taxonomic rest group containing all soils that could not be accommodated in any of the other Reference Soil Groups. In practice, Regosols are very weakly developed mineral soils in unconsolidated materials that have only an ochric surface horizon and that are not very shallow ([Leptosols](#)), sandy ([Arenosols](#)) or with fluvic properties ([Fluvisols](#)). Regosols are extensive in eroding lands, in particular in arid and semi-arid areas and in mountain regions. Internationally, Regosols correlate with soil taxa that are marked by incipient soil formation such as ‘Entisols’ (USA), ‘skeletal soils’ (Australia), ‘Rohböden’ (Germany), and ‘Sols peu évolués régosoliques d’érosion’ or even ‘Sols minéraux bruts d’apport éolien ou volcanique’ (France).

Definition of Regosols

Being a taxonomic rest group, Regosols are not defined in terms of their soil properties but are rather described in terms of properties that they do not have. For all practical purposes, Regosols are soils in unconsolidated mineral material of some depth, excluding coarse textured materials and materials with fluvic properties, and have no diagnostic horizons other than an [ochric horizon](#).

Common soil units:

[Gelic](#), [Leptic](#), [Hyposalic](#), [Gleyic](#), [Thaptovitric](#), [Thaptoandic](#), [Arenic](#), [Aric](#), [Garbic](#), [Reductic](#), [Spolic](#), [Urbic](#), [Tephric](#), [Gelistagnic](#), [Stagnic](#), [Humic](#), [Gypsiric](#), [Calcaric](#), [Takyric](#), [Yermic](#), [Aridic](#), [Hyperochric](#), [Anthropic](#), [Skeletal](#), [Hyposodic](#), [Vermic](#), [Dystric](#), [Eutric](#), [Haplic](#).

Summary description of Regosols

Connotation: soils in the weathered shell of the earth; from Gr. rhegos, blanket.

Parent material: unconsolidated, finely grained weathering material.

Environment: all climate zones without permafrost and at all elevations. Regosols are particularly common in arid areas, in the dry tropics and in mountain regions.

Profile development: AC-profiles with no other diagnostic horizon than an ochric surface horizon. Profile development is minimal as a consequence of young age and/or slow soil formation e.g. because of prolonged drought.

Use: land use and management vary widely. Some Regosols are used for capital-intensive irrigated farming but the most common land use is low volume grazing. Regosols in mountain areas are best left under forest.

Regional distribution of Regosols

Regosols cover an estimated 260 million hectares worldwide, mainly in arid areas in the mid-western USA, Northern Africa, the Near East and Australia. Some 50 million hectares of Regosols occur in the dry tropics and another 36 million hectares in mountain areas. The extent of most Regosol areas is only limited; consequently Regosols are common inclusions in other map units on small-scale maps. See Figure 1.



 Dominant  Associated  Inclusions  Miscellaneous lands

Figure 1. Regosols worldwide.



Associations with other Reference Soil Groups

Being a taxonomic rest group, Regosols are found in association with a wide range of other Reference Soil Groups. However they are particularly common alongside other young or poorly developed soils in arid, degrading or eroding areas. As the listing of 'common soil units' (see above) suggests, many Regosols are intergrades, with properties tending towards those of [Cryosols](#) (cold regions), [Andosols](#), [Leptosols](#) or [Umbrisols](#) (mountain regions), [Calcisols](#) or [Gypsisols](#) (arid regions), [Arenosols](#) and [Podzols](#) (sandy deposits) or [Cambisols](#).

Genesis of Regosols

Soil forming processes have had a minimal effect on the properties of Regosols. This may have been caused by

- 1 conditions, which retard soil formation such as a dry and hot desert climate,
- 2 recent truncation/exposure of the soil material, or
- 3 steady rejuvenation of the soil material.

Profile development is limited to formation of a thin [ochric](#) surface horizon over (almost) unaltered parent material. The paucity of pedogenetic transformation products explains the low coherence of the matrix material and makes that soil colours are normally still determined by the composition of the mineral soil fraction. In regions with considerable evaporation surplus over precipitation, some lime and/or gypsum may have accumulated at shallow depth in the profile but not to the extent that a [calcic](#) or [gypsic](#) horizon is present. Soils in recent deposits of mine waste, urban waste, landfills and dredgings that are (still) too young for soil formation to occur, are included in the Reference Soil Group of the Regosols.

Characteristics of Regosols

The great variation among Regosols (taxonomic rest group!) makes it virtually impossible to give a detailed account of Regosol characteristics.

The central concept of a Regosol is a deep, well drained, medium textured, non-differentiated mineral soil that has minimal expression of diagnostic horizons (other than an [ochric horizon](#)), properties or materials.

Some general observations:

- Parent material and climate dominate the morphology of Regosols. The content of weatherable minerals varies from low to extremely high (little transformation).
- In cool climates, the surface horizon contains poorly decomposed organic matter whereas (ochric) surface horizons tend to be thin, low in organic matter and generally weakly expressed in hot, dry climates.
- Regosols in dry regions have generally a higher base status than Regosols in more humid (mountain) regions.
- Low coherence of the matrix material makes most Regosols in sloping areas prone to erosion.
- The low water holding capacity of most Regosols and their high permeability to water make them sensitive to drought.
- Many Regosols in colluvial material are prone to slaking in particular those in löss. This makes them sensitive to erosion in wet periods. Many Regosols form a hard surface crust early in the dry season; the crust hinders emergence of seedlings and infiltration of rain and irrigation water in the dry season.



Management and use of Regosols

Regosols in desert areas have minimal agricultural significance. Regosols in the steppe region with 500-1000 mm rainfall per year need irrigation for satisfactory crop production. The low moisture holding capacity of these soils calls for frequent applications of irrigation water; sprinkler or trickle irrigation solves the problem but is rarely economic. Where rainfall exceeds 750 mm per year, the entire profile is raised to its (low) water holding capacity early in the wet season; improvement of dry farming practices may then be a better investment than installation of costly irrigation facilities.

Many Regosols are used for extensive grazing. Regosols on colluvial deposits in the loess belt of northern Europe and North America are mostly cultivated; they are planted to small grains, sugar beet or fruit trees. Regosols in mountain regions are quite delicate and are best left under forest.