



Soil Horizons Reference Guide

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Master Horizons

- O** Predominantly organic material, leaves, moss, and other plant materials may be identifiable or may be extensively altered.
- A** Predominantly mineral, mixed with lesser amounts of accumulated organic matter. Typically a surface horizon but often below an **O** horizon.
- B** Subsurface horizon with illuvial (washed in) accumulation of one or more clay, Fe, Al, Si, humus, carbonates, gypsum, or a horizon with other specific subsoil features.
- C** Parent material, unconsolidated earthy material with little or no evidence of horizon development or pedogenic alteration.
- E** Mineral horizon, usually light in color, from which some combination of fine clays, Fe, Al, and organic matter has been eluviated (washed out).
- L** Limnic layer including organic and inorganic materials deposited through the actions of aquatic organisms.
- M** Root-limiting layer of human-manufactured material such as asphalt, concrete, or plastic.

- R** Continuous bedrock, too hard for hand-digging with a spade.
- V** Mineral horizons formed at the soil surface or below a layer of rock fragments. They are characterized by the predominance of vesicular pores and have platy, prismatic, or columnar structure.
- W** Rarely used. A layer of liquid or frozen water within or beneath, but not above, the soil.
- AE** Transition horizon, dominated by properties of an **A** horizon with subordinate properties of an **E** horizon. Similarly, the first letter designates the dominant properties in other transition horizons: **AB**, **BA**, **BE**, **EA**, **EB**, **BC**, and **CB**.
- A/E** Combination horizon, dominated by properties of an **A** horizon with discrete intermingled bodies of **E** horizon. Similarly, the first letter designates the dominant horizon in other combination horizons: **A/B**, **A/C**, **B/A**, **B/E**, **B/C**, **E/A**, **E/B**, **C/A**, and **C/B**.

Subordinate Designators

- a** Highly decomposed organic matter. Example: **Oa**.
- b** Buried horizon that developed before burial. Example: **Ab**.
- c** Concretions or nodules. Example: **Bc**.
- co** Coprogenous earth (sedimentary peat). Example: **Lco**.
- d** Dense horizon physically restricting roots. Example: **Bd**.
- di** Diatomaceous earth. Example: **Ldi**.
- e** Organic material of intermediate decomposition. Example: **Oe**.
- f** Frozen soil or water. Example: **Wf**.
- ff** Dry permafrost, permanently below 0°C, but little water present. Example: **Aff**.
- g** Strong gleying, iron is reduced, usually having a chroma below 2. Example: **Cg**.
- h** Illuvial accumulation of organic matter. Example: **Bh**.
- i** Slightly decomposed organic matter. Example: **Oi**.
- j** Accumulation of jarosite, a yellow sulfate mineral. Example: **Bj**.
- jj** Evidence of cryoturbation (soil horizon disruption from freezing). Example: **Ajj**.
- k** Accumulation of carbonates. Example: **Bk**.
- kk** Engulfment of horizon by secondary carbonates. Example: **Bkk**.
- m** Pedogenic cementation. Example: **Bm**.
- ma** Marl. Example: **Lma**.
- n** Accumulation of sodium. Example: **Bn**.

- o** Residual accumulation of sesquioxides. Example: **Bo**.
- p** Tillage or other disturbance of the surface soil. Example: **Ap**.
- q** Accumulation of silica. Example: **Bq**.
- r** Weathered or soft bedrock. Example: **Cr**.
- s** Illuvial accumulation of metals complexed with organic matter. Examples: **Bs**.
- se** Presence of sulfides. Example: **Bse**.
- ss** Slickensides. Example: **Bss**.
- t** Accumulation of silicate clay. Example: **Bt**.
- u** Presence of human-manufactured materials (artifacts). Example: **Au**.
- v** Plinthite. Example: **Bv**.
- w** Development of color or structure, without accumulation of colloids. Example: **Bw**.
- x** Fragipan, dense, firm, and brittle. Example: **Bx**.
- y** Accumulation of gypsum. Example: **By**.
- yy** Dominance of horizon by gypsum. Example: **Byy**.
- z** Accumulation of salts more soluble than gypsum. Example: **Bz**.

References:

1. Soil Survey Staff. 2022. Keys to Soil Taxonomy, 13th ed. USDA-Natural Resources Conservation Service (pp. 377-382).