

PEDOLOGICAL REPORT

- 1) **Site identification** with statement of the volume to be excavated.
- 2) **Geographical characterization of the survey area.**
- 3) **Pedological characterization** based on the 1:50.000 map of the soils of Emilia with description of the soil units within the excavation site <http://geo.regione.emilia-romagna.it/cartpedo/>.
- 4) **Location and identification of sampling sites on a cartographic basis** with indication of the geographical coordinates. The sampling sites must have a density of 1 per hectare for LARGE SITES and must be located in such a way as to homogeneously represent the area as a whole.
- 5) **Description of soil observations (auger hole or profile).** Each site must be described by manual augering for at least one meter depth using the “Guida di campagna per la descrizione delle osservazioni pedologiche” (*Field Guide for the description of pedological observations*) that can be consulted and downloaded from the site <http://ambiente.regione.emilia-romagna.it/geology/themes/soils/survey-and-cartography-of-the-soil#section> and the appropriate description sheets as well downloadable from the same site.

The following is a summary table of the characters to be described with regard to the construction of the manual augerings or of the profiles subdivided into site, soil and horizons.

Hand auger hole	Characters to describe	Soil profile
Site characteristics		
X	Coordinates	X
X	Date	X
X	Slope aspect and elevation	X
X	Morphology	X
X	Surface stoniness	X
X	Land use, soil cover	X
X	Erosion or other surface features	X
Soil horizons characteristics		
X	Depth	X
X	Humidity	X
X	Color	X
X	Textural class	X
X	Volumetric content, form, and sizes of coarse fragments	X
	Structure degree	X
	Field pH	X
	HCl reaction for coarse fragments and fine earth	X
X	Horizon designation and sampling	X

Table 1. Parameters to consider for the pedological report.

- 6) **Sampling directions:** samples must be taken between 0-40 cm because they are representative of topsoil in the case of soils for agricultural use, while in "natural" soils between 0-10 cm. The samples must not be of a composite type.
- 7) **Laboratory analyses:** the soil parameters will be determined according to the official methods of soil chemical analysis (Ministerial Decree 13/09/1999) or with methods officially recognized or standardized (UNI, ISO, ...) and consist of: texture (percentage content of sand, silt and clay), pH (in H₂O), organic carbon, assimilable phosphorus, potassium and magnesium, and total nitrogen. The results will be reported in tables within the report and the analyses certificates will be attached.
- 8) **Conclusions:** the report will have a) to establish the type of soil at the site in relation to i) the regional soil map (or to propose a survey/mapping of the area at the scale 1:5000), and ii) to the archive of the Soil Units of the Emilia-Romagna Region; b) to identify the thickness of the topsoil throughout the excavation site as well as its quality characteristics based on the reference diagrams below.
Subsoil will be identified based on the field estimates only for texture, color, and calcium carbonate content determined with 10% diluted HCl.

The report must be signed by a senior pedologist.

	High quality	Medium quality	Low quality	Reference methods
Soil textural class	SiCL (caly ≤ 27%), CL, SL, SCL, SiL, L	LS, SL, L, SiL, SC, CL, SiCL (clay ≤ 35%), SiC, C (silt MAX 50%)	LS, SL, L, SiL, SC, CL, SiCL (clay ≤ 35%), SiC, C (silt MAX 50%)	D.M. 13/09/1999
Nutrients content N (g/kg) P ₂ O ₅ (mg/kg) K ₂ O (mg/kg)	N >0,5% P ₂ O ₅ >23 ppm K ₂ O > 120 ppm	N >0,5% P ₂ O ₅ >23 ppm K ₂ O > 120 ppm	nd	D.M. 13/09/1999
Organic matter (CO*1,726)	≥ 2,5%	≥ 2%	< 2%	D.M. 13/09/1999

Table 2. Topsoil parameters and reference methods for their analyses.