

CRITERIA FOR DEFINING THE SERIES (DAR, 2006)

On the Soils Map of Catalonia (1:25 000), the soil series are defined on the basis of the following hierarchically organised criteria.

- **Classification at the soil family level according to Soil Taxonomy. Material originario.**
- **Original material. Clase de drenaje.**
- **Effective depth.**
- **Type of drainage.**
- **Texture and coarse-element content of the sub-surface horizon.**
- **Equivalent gypsum and calcium carbonate content**
- **Thickness of the horizons.**

These properties correspond to a control section of the whole soil profile (except in cases of soils less than 18 cm deep) up to a depth of 2 metres, or to contact with a lithic, paralithic or petrocalcic horizon.

DESCRIPTION OF THE CRITERIA FOR DEFINING SOIL SERIES

CLASSIFICATION ACCORDING TO SOIL TAXONOMY

The classification is based on a specific version of Soil Taxonomy, which is correctly specified on each map.

The versions used were: SSS 1975, SSS 1981, SSS 1982, SSS 1987, SSS 1990, SSS 1992, SSS 1994, SSS 1996, SSS 1998 and SSS 1999.

ORIGINAL MATERIAL

The correlation of the Soil Series was based on three zones; a relation of original materials was established for each zone.

A. The soils of Girona

Tertiary sedimentary rocks:* :
- Sandstones and conglomerates
- Marls and sandstones
- Lutites and sandstones
- Lutites, sandstones and conglomerates
- Sandstones, calcilutites and limestones
- Limestones, dolomites, sandstones, marls and lutites
- Lutites and marls
Olivine basalts and basanites
Quaternary travertines
Quaternary detritic and terrigenous materials ** :
- Deltaic
- Colluvial sediments from limestone rocks
- From metamorphic rocks and granites
- Colluvial sediments from palaeozoic rocks
- Alluvial and colluvial
- Of fluvial origin
- With coarse elements
- With polygenic coarse elements
- Fine sediments
Aeolic sands

B. The soils of the Lleida Plain

* Of a limestone nature

** Unless indicated to the contrary, these are materials of carbonate origin

Tertiary sedimentary rocks:
- Conglomerates
- Palaeochannels of poorly consolidated sandstone
- Limestones
- Alternate layers (several centimetres thick) of gypsum and lutites
- Lutites
- Lutites with a high gypsum content
- Gypsum
Quaternary detritic and terrigenous materials:
- With polygenetic gravels
- With calcareous gravels
- With calcareous gravels on: <ul style="list-style-type: none"> - conglomerates - lutites
- With gypsum
- Fine sediments
- Fines sediments on: <ul style="list-style-type: none"> - lutites - sandstones and lutites - alternate layers (several centimetres thick) of gypsum in lutites - limestones
- Yellowish deposits of silt and fine sand
- Silt-sized gypsum

C. The soils of the Ebro valley

Conglomerates
Calcilutites
Detritic terrigenous materials:
- With gravels: <ul style="list-style-type: none"> - calcareous - polygenic
- Fine sediments
Sands
Sands and silts

EFFECTIVE ROOT DEPTH OF THE SOIL

Until a lithic, paralithic, petrocalcic horizon or a layer of skeletal gravels.

Effective depth (cm)	Classes
< 20	Very superficial or not very deep
20-40	Superficial or shallow
41-80	Moderately deep
81-120	Deep
> 120	Very deep

DRAINAGE CLASS: INTERNAL DRAINAGE

Criteria adopted	Description
Water leaves the soil very rapidly	Very rapid drainage
Water leaves the soil rapidly	Rapid drainage
Water leaves the soil easily, but slowly enough to be available to plants. Generally without any oxidation-reduction stains in the first 100 cm or up to 2 % between depths of 60 and 100 cm.	Good drainage
Water leaves the soil quite slowly. 2-20 % Fe - Mn mottling with oxidation-reduction between depths of 60 and 100cm.	Moderately good drainage
Water leaves the soil slowly, with the soil remaining saturated for long periods. Oxidation-reduction (Fe - Mn) stains between the base of the Ap horizon and a depth of 60 cm.	Imperfect drainage
Water leaves the soil very slowly, with the soil remaining saturated for long periods. Oxide mottling with chrome in less than 2 % of the first 60 cm of the soil profile.	Little drainage
Water leaves the soil so slowly that the phreatic level without oxygen is located at the surface for long periods.	Very little drainage

SUBSURFACE HORIZON TEXTURE AND COARSE ELEMENT CONTENT:

Subsurface texture

Texture class	Basic texture
Coarse texture	Sand, loamy-sand
Moderate-coarse texture	Sandy-loam, fine sandy-loam
Medium texture	Very fine sandy-loam, loam, silty-loam, silty
Moderately fine texture	Clay-loam, sandy-clay-loam, silty-clay-loam
Fine texture	Sandy-clay, silty-clay, clayey

Coarse element content

% by volume	Coarse elements
0	None
<1	Very few
1 - 5	Few
6 - 15	Frequent
16 – 35	Very frequent
35 - 70	Abundant
> 70	Very abundant

EQUIVALENT GYPSUM AND CALCIUM CARBONATE CONTENTS

Equivalent Calcium Carbonate

A subdivision is made for carbonate families (>40 % CaCO₃ plus gypsum):

- Between 40 – 60 %
- > 60 %

Gypsum

Series with gypsum horizons are separated according to the following parameters:

- Between 5 – 14 %
- Between 15 – 30 %
- Between 31 – 60 %
- > 60 %

THICKNESS OF THE HORIZONS

A given type of soil may contain horizons of different thicknesses. For calcareous Mollisols this criterion is applied for horizons that are more than 40 cm thick.

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