

REFERENCES

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Appendix G - Definition of Soil Terms

AGGREGATE STABILITY

The stability of the soil aggregate to water falling as rain or applied as irrigation. Many types of aggregate stability tests are available; two of which are those described by Emerson (1967) and Loveday (1974).

AMOUNTS

As used here, with reference to soil inclusions, the different terms and their percentages are as follows:- occasional (<1) – trace (1-5) – slight (6-15) – light (16-35) – moderate (36-70) – heavy (>70).

APEDAL

Means that in the moderately moist to the moist state, none of the soil material occurs in the form of peds; it is either massive or single grain and when disturbed separates into fragments or primary particles (see pedality).

BLEACHED

Describes a soil horizon which has become pale in colour owing to leaching. Two degrees of bleaching are recognised as follows:-

The conspicuous bleach: in which 80% or more of the soil horizon is bleached.

The sporadic bleach: in which less than 80% of the horizon is bleached.

COLOUR AND MOTTLING

Munsell Soil Colour Charts, 1973 Edition, are used in identifying soil colour names and their Munsell notations.

Munsell colour notations refer to moist soils; the suffix “d” indicates the colour of the dry soil (e.g., 10YR7/1d).

Some soil samples show more than one colour. The matrix (dominant) colour is always recorded first, followed by the sub-dominant colours.

When a sub-dominant colour is recorded only by name (i.e., without its Munsell colour notation) it indicates the failure of this particular colour to qualify for mottling, either by area or by colour differences, for the purpose of the Factual Key classification.

CONDITION OF SURFACE SOIL

Refers to the natural condition of the surface soil and its reaction to the usual wetting and drying cycle. Cultivation will often alter the condition of surface soil, but most conditions will reform when the soil is left undisturbed.

DUPLEX SOIL PROFILE

Refers to the soil profile showing a marked difference in texture between the surface and subsoil horizons. Texture contrast must be at least one and a half texture groups between A and B horizons (Northcote, 1979).

FERRUGINOUS CONCRETIONS

More or less rounded nodules of variable size and composed mainly of iron oxide.

FIELD CAPACITY

The percentage of water remaining in a soil two or three days after having been saturated and after free drainage has practically ceased. The $\frac{1}{3}$ bar percentage (using < 2 mm sieved soil samples) is used only as a rough estimate to the field capacity.

FACTUAL KEY CLASSIFICATION

Refers to the soil classification system as described in “A Factual Key for the Recognition of Australian Soils”, 4th Edition, by Keith H. Northcote, 1979.

For the duplex (D) soil profile, the Principal Profile Form (P.P.F) is extended to indicate other important soil properties. For example, Dr 2.23/SCL (14 cm) means a Dr 2.23 soil having a sandy clay loam surface with a 14 cm depth to the clayey subsoil. For the gradational (G) soils, additional suffix is only given to indicate the texture of the surface horizons.

FRIABLE

Refers to Soil Consistence

GRADATIONAL TEXTURE PROFILE

Refers to the soil profile in which the texture gradually becomes finer (more clayey) with depth.

HARDPAN

A hardened and/or cemented horizon in or below the soil profile.

HARD-SETTING

A surface soil is considered to be hard-setting when it becomes hard and apparently apedal on periodic drying out.

MASSIVE

Structureless (i.e. “apedal”). The soil material is coherent.

PAN (= SOIL PAN)

See Hardpan.

PED

An individual natural soil aggregate.

PEDAL

See Soil Pedality.

PLASTIC

Refers to Soil Consistence.

SMOOTH FABRIC (= SMOOTH-PED FABRIC)

Peds are evident, and characteristically more than 50 per cent of them are smooth-faced, that is, have a general lac condition on their surfaces.

SOIL BOUNDARIES

The boundary between soil horizons defines the nature of the change from one horizon to that below. In this report it is specified by the measure of the thickness (or width) of the transition zone between horizons thus:

- Sharp (or Abrupt) = boundary < 2 cm wide.
- Clear = boundary is 2 – 5 cm wide.
- Gradual = boundary is 5 – 10 cm wide.
- Diffuse = boundary > 10 cm wide.

SOIL CONSISTENCE

Comprises the attributes of soil material that are expressed by the degree and kind of cohesion and adhesion or by the resistance to deformation or rupture. It is markedly affected by the moisture state of the soil. Terms used for consistence include: loose, soft, hard, friable, non-friable, plastic and sticky.

SOIL HORIZON

A layer of soil, more or less parallel to the land surface, similar throughout and recognisably different from the material above and below. The horizon may be distinguished by differences in one or more of

the following characteristics: colour, texture, structure, consistence, mottling, organic matter content and the presence of visible products of weathering and leaching such as calcium carbonate, gypsum, iron oxide and ferruginous concretions. The following horizons in the soil profile may be recognised:

Surface or A Horizon: The surface layer of the soil in which organic matter has accumulated and which may be partly leached of clay and soluble material. It may be divided into two or more sub-horizons as follows :

A₁ horizon: The surface soil more or less darkened by organic matter – a zone of maximum biological activity.

A₂ horizon: A sub-surface layer lower in organic matter than the A₁ and, in consequence, usually lighter in colour. It is the zone of maximum leaching.

Subsoil or B Horizon: Situated below the surface or A horizon and is usually heavier in texture than that horizon. The B horizon represents the zone of accumulation of clay and other materials, including calcium carbonate and iron oxides.

SOIL MORPHOLOGY

The physical constitution of the various horizons and their arrangement in the soil profile.

SOIL PEDALITY

Refers to the relative proportion of peds in the soil, as follows:

Highly pedal (= pedal): in the moderately moist to the moist state, one-third or more of the soil material consists of peds.

Weakly pedal: in the moderately moist to the moist state, less than one-third of the soil material consists of peds.

Non-pedal (= apedal): essentially no recognisable peds.

SOIL PROFILE

This is the vertical section of a soil exposing the sequence of horizons from the surface to an arbitrary depth. For the purpose of this report, soil profiles were only discussed with regard to their A and B horizons.

SOIL REACTION TREND

Indicates the general direction of pH changes down the profile, eg.

Acid trend: The pH values are, for the surface soil, lower than 7.0, and for the deep subsoil, less than 6.5.

Neutral trend: The pH values are, for the surface soil, between 5.0 and 8.0, and for the deep subsoil, between 6.5 and 8.0.

Alkaline trend: The pH values are, for the surface soil, higher than 5.0, and for the deep subsoil, higher than 8.0.

SOIL STRUCTURE

Describes the way in which the primary soil particles are arranged into soil aggregates (peds).

SOIL TEXTURE

Soil texture is a measure of the behaviour of a small handful of soil when moistened to sticky point (approximately to field moisture capacity), kneaded into a ball and then pressed out between thumb and forefinger. It is strongly influenced by clay contents and is affected by other properties, including clay mineral type, organic matter, oxides, carbonates and exchangeable cations. Texture is described in terms of texture grades some of which are listed below:-

LS = loamy sand	CL = clay loam
Cys = clayey sand	FSCL = fine sandy clay loam
SL = sandy loam	SC = sandy clay
FSL = fine sandy loam	LC = light clay
lt SCL = light sandy clay loam	MC = medium clay
L = loam	M-HC = medium to heavy clay
SCL = sandy clay loam	HC = heavy clay

Other Qualifying Symbols

(s) = sandy	(h) = heavy
(gr) = gritty	(lt) = light
(fs) = fine sandy	

STICKY

Refers to Soil Consistence.

TOTAL SOLUBLE SALTS

Total Soluble Salts % = Electrical Conductivity ($\mu\text{S}/\text{cm}$) $\times 3.3 \times 10^{-4}$.

UNIFORM TEXTURE PROFILE

Refers to the soil profile dominated by the mineral fraction with small, if any, texture differences throughout.

WILTING POINT

The water content of a soil when indicator plants growing in that soil wilt and fail to recover when placed in a humid chamber. Often the 15-bar percentage is used as an approximation to the wilting point.