

Finding and Describing Horizons

Soil Pit Technique



Soil formed under very dry or arid conditions in New Mexico, USA

Starting from top, observe profile to determine properties and differences between horizons.

Place golf tee or marker at the top and bottom of each horizon to clearly identify it.

Look for: different colors, shapes, roots, the size and amount of stones, small dark nodules (called concretions), worms, or other small animals and insects, worm channels, and anything else that is noticeable.

Finding and Describing Horizons

Exposed Profile (Road Cut) Technique

Obtain permission to take samples from the road cut, excavation, or other soil profile exposed by others. Obey any and all safety precautions requested.



Follow Soil Pit Technique directions.

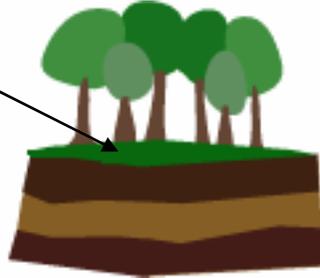
Expose a fresh soil face by scraping approximately 2cm off of the vertical surface of the soil profile.



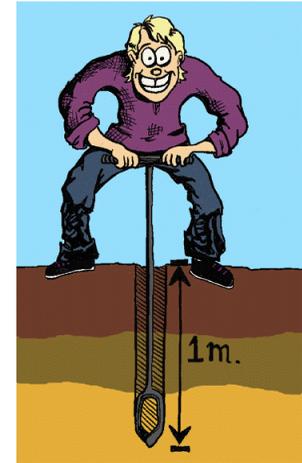
Finding and Describing Horizons

Auger Technique

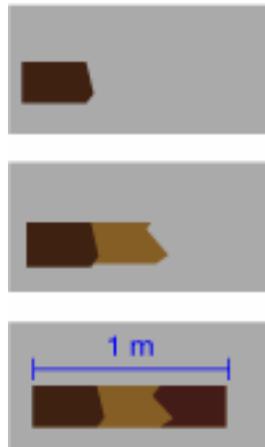
1. Identify an area where you can dig four holes where the soil profiles should be similar.



2. Spread a plastic bag, tarp, board, or other surface on the ground next to where you will dig your first hole.



3. Assemble a profile of the top 1 meter of the soil by removing successive samples with the auger and laying them end-to-end as follows:



4. Identify each horizon and measure its thickness using the depth of the auger hole.



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Surface Sample Technique

In situations where it is not possible to expose the top meter of soil, another option is to use the top 10 cm of soil as a horizon sample for soil characterization.

1. Use a garden trowel or shovel to carefully remove the top 10 cm of soil from a small area and set it on the ground.
2. Treat this sample as a horizon and proceed to characterize its properties.



Horizon Properties

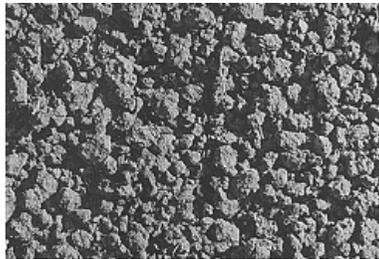
Soil Structure

Soil structure is the shape that the soil takes based on its physical and chemical properties. Each individual unit of soil structure is called a **ped**. Possible choices of soil structure are:

With Structure:

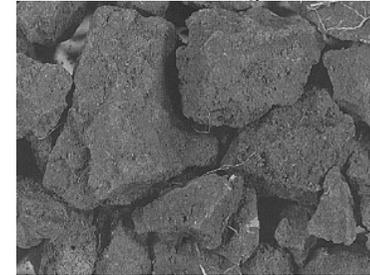
Granular

Actual size



Blocky

Actual size



Prismatic

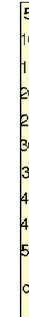


Actual size

Columnar



Platy



Structureless:

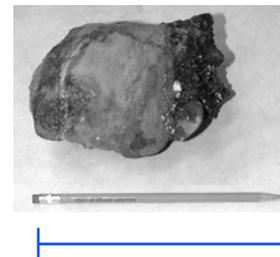
Single Grained

See hands for relative size



Massive

Pencil is 19 cm



Horizon Properties

Soil Color

Munsell Notation

The Munsell code below each color in the GLOBE color chart is a universal notation that describes the soils' color.



7.5 YR 4/3

The first set of number and letter symbols represents the **hue**.

- Hue represents the position of the color on the color wheel (Y=Yellow, R=Red, G=Green, B=Blue, YR=Yellow Red, RY=Red Yellow).

Horizon Properties

Soil Color (continued)

Munsell Notation

The Munsell code below each color in the GLOBE color chart is a universal notation that describes the soils' color.



7.5 YR **4** / **3**

The number before the slash is the **Value**.

The number after the slash is the **Chroma**.

- Value indicates the lightness of a color. The scale of value ranges from 0 for pure black to 10 for pure white.

- Chroma describes how the “intensity” of a color. Colors of low chroma values are sometimes called weak, while those of high chroma are said to be highly saturated, strong, or vivid. the scale starts at zero, for neutral colors, but there is no arbitrary end to the scale.

Horizon Properties

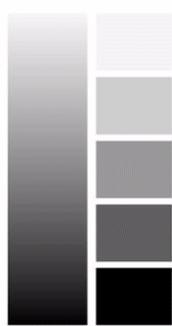
Soil Color (continued)

Munsell Notation

Hue



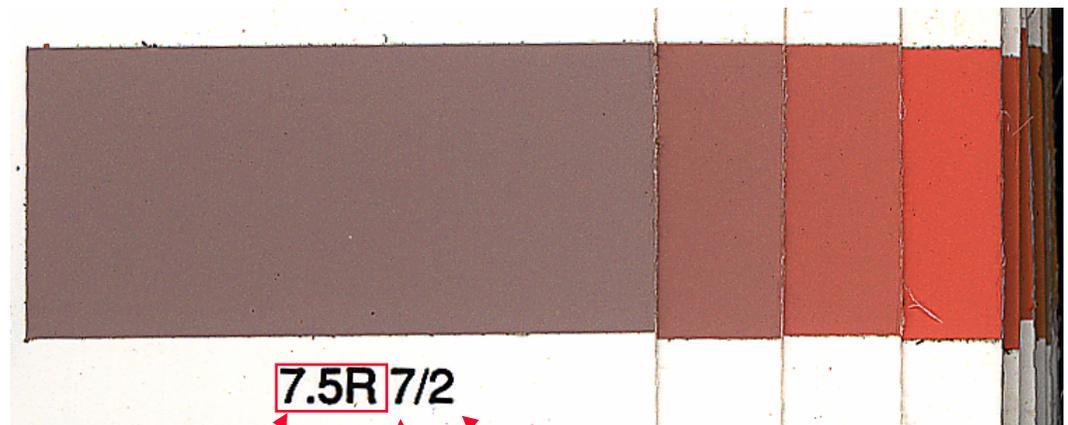
Value



Chroma



Soil Color Chart Pages



Hue

Value

Chroma

Horizon Properties

Soil Color (continued)

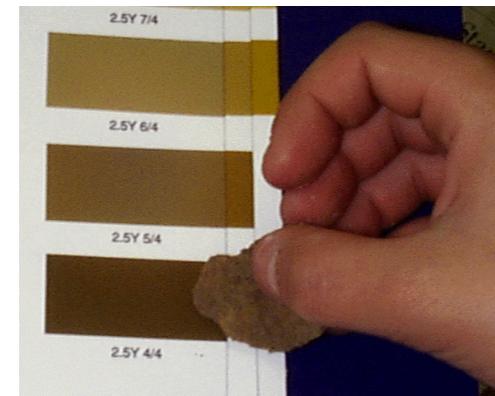
1. Take a ped of soil from each horizon and note on the data sheet whether it is moist, dry or wet. If it is dry, moisten it slightly with water from your water bottle.



3. Break the ped and compare the color of the inside surface with the soil color chart.



2. Stand with the sun over your shoulder so that sunlight shines on the color chart and the soil sample you are examining.



Note: Sometimes, a soil sample may have more than one color. Record a maximum of two colors if necessary, and indicate (1) the Main (dominant color) and (2) the Other (sub-dominant color).