

Lecture 7

Soil Morphology

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Soil colors

Soil color is a **critical** characteristic used to **classify** and **identify** different types of soil.

The color of soil can vary greatly depending on factors such as the **mineral content**, **organic matter**, and **water content** of the soil.

Soil colors

Generally, soil color ranges from light such as **white**, **yellow**, and dark such as **brown**, **red**, and **black**.



Soil colors

Soil color can provide information about the soil's **fertility, drainage, human activities** and **composition**.

Soil colors

Organic matter content: Dark high fertility and nutrient availability.

Drainage and aeration: Gray soils may indicate poor drainage and low oxygen levels, which can impact plant growth and soil health.

Mineral content: Red and yellow soils typically indicate a high level of iron oxide, while gray or white soils may have a low mineral content.

Soil texture: Soil color can also provide signs about the soil texture, with darker soils indicating a higher clay content and lighter soils indicating a higher sand content.

Soil colors

Acidity: Soils with a reddish tint may indicate an acidic soil pH, which can affect plant growth and nutrient availability.

Pollution: Human activities such as industrial pollution can alter soil color, making it appear darker.

Land use history: Soil color can also provide signs about the land use history, with soils that have been heavily cultivated or disturbed often having a different color than undisturbed soils.

Soil colors

Overall, understanding the color of soil can help in making informed decisions about land use and management.

Soil consistence

Soil consistency refers to the physical state of the soil, including its **ability to be compressed**, its **stickiness**, and its **resistance** to deformation.

Soil consistency is affected by factors such as soil **texture**, **structure**, **moisture content**, and **organic matter** content.

Soil consistency

Soil consistency can provide valuable indications about the soil's properties and how it will behave under different conditions.



Soil consistency

Water retention: Soil with a **friable** consistency typically has **high water-holding capacity**, making it **suitable for plant growth** in areas with low rainfall or irrigation. However, soils that are too **hard** may have **poor water-holding capacity**, which can lead to **waterlogging** or **drought stress in plants**.

Compaction: Soil with a **firm** may indicate soil **compaction**, which can limit **root penetration** and lead to poor plant growth.

Soil consistence

Tillage: Soil with a **friable** consistency is typically easier to **till and manage**, which can facilitate soil preparation for planting and cultivation.

Plant growth: Soil consistency can also affect plant growth, with **friable** soils providing **better aeration** and **water-holding capacity**.

Soil consistence

Erosion: Soil with a **friable** consistency may be **more vulnerable** to **erosion**, which can lead to **soil loss**, **nutrient depletion**, and **reduced productivity**. Managing soil consistency can help to reduce erosion risk and maintain long-term soil health.

Overall, soil consistency is an important characteristic that can provide valuable information about **soil properties**, **plant growth**, and **soil management practices**. Careful attention to soil consistency can help to maintain optimal soil health and productivity over the long term.

Questions?