

UNIT C: TRAITS OF SOIL

Lesson 3: Understanding Soil Color

TERMS

- Bright colored
- Color
- Dull colored
- Humus
- Mottle colored
- Native vegetation
- Structure
- Tall prairie grass
- Texture
- Deciduous
hardwood forest

- I. Soils have many features that are used to recognize differences between them. They include:
 - A. *Texture* – coarseness or fineness of soil particles
 - B. *Structure* – the way in which soil particles are held together
 - C. Depth of horizons – the depth of each soil
 - D. *Color* – refers to the darkness or lightness of the soil color

II. Colors associated with surface soils are dependent on the amount of organic matter found in them. Colors may be classified as:

- A. Very dark – approximately 5% organic matter
- B. Dark – approximately 3.5% organic matter
- C. Moderately dark – approximately 2.5% organic matter
- D. Light – approximately 2% organic matter
- E. Very light – approximately 1.5% organic matter

III. The amount of organic matter is the factor used to determine the color of the surface soil. The amount of organic matter is determined by the kind of native vegetation. *Native vegetation* refers to the type of plant material that grew on the soil. For example, two primary types of native vegetation found in most countries are:

- A. *Tall prairie grass* – grasses had abundant roots, which filled the top 1 to 2 feet of the soil. Only partial decay of the roots over a long period of time gave the high organic matter content to prairie soils. These soils are high in *humus*, a type of organic matter that results from the partial decay of plants and animals. They tend to be dark to very dark.
- B. *Deciduous hardwood forests* – a shallow layer of partially decayed leaves, twigs, and fallen logs accumulated on the surface. Because they were on the surface, they decayed more rapidly than those of the prairie grass. This left only a thin, moderately dark top layer. As these soils have been worked, they have been mixed with the lighter soil underneath to produce a lighter color.

IV. Subsoil colors are associated with natural drainage of the soils. This is the drainage condition that existed when the soil was forming. Subsoil colors are classified as:

- A. *Bright-colored* – brown, reddish brown, or yellowish brown
- B. *Dull-colored* – gray or olive gray
- C. *Mottle-colored* – clumps of both bright and dull colors mixed together

V. The color of subsoil is determined by the status of iron compounds. These are determined by the type of drainage found in the soil as it formed.

A. Good drainage provides subsoil that is bright in color. This is because the iron found in these soils has been oxidized. This can be compared to metal that oxidizes or rusts when both moisture and air are present. Rust has a bright or orange color.

B. Poor drainage provides subsoil that is dull or gray in color. This is because the iron found in those soils has not been subject to air or oxygen. The iron compounds do not oxidize. This leaves a grayish color.

C. Somewhat poor drainage provides subsoils that are mottled. This is because the soil was saturated with moisture for certain periods. This leaves a gray color in some soil clumps. Since the soil was comparatively dry during other periods, it left a bright color in other soil clumps.

VI. In addition to organic matter and drainage, soil color may also be affected by other factors:

A. Parent material. The color of a soil is associated with the kind of material from which it is formed. Soils that are developed from sand or light-colored rock will be lighter. Those developed from darker materials such as peat or muck, will be darker in color.

- B. Age. Some soils can be younger than others. As soils age, much of the darker color is lost due to the weathering process. This causes the soil to lose organic matter.
- C. Slope. Soil on top of hills is usually lighter in color than the soil in depressions or on level ground. This is partly due to the darker topsoil being washed off the hills. This leaves the lighter subsurface or subsoil exposed. Also, there tends to be moisture on lower land. This allows more abundant growth of plants in the lower areas, which in turn provides more organic matter and a darker color to lower soils.

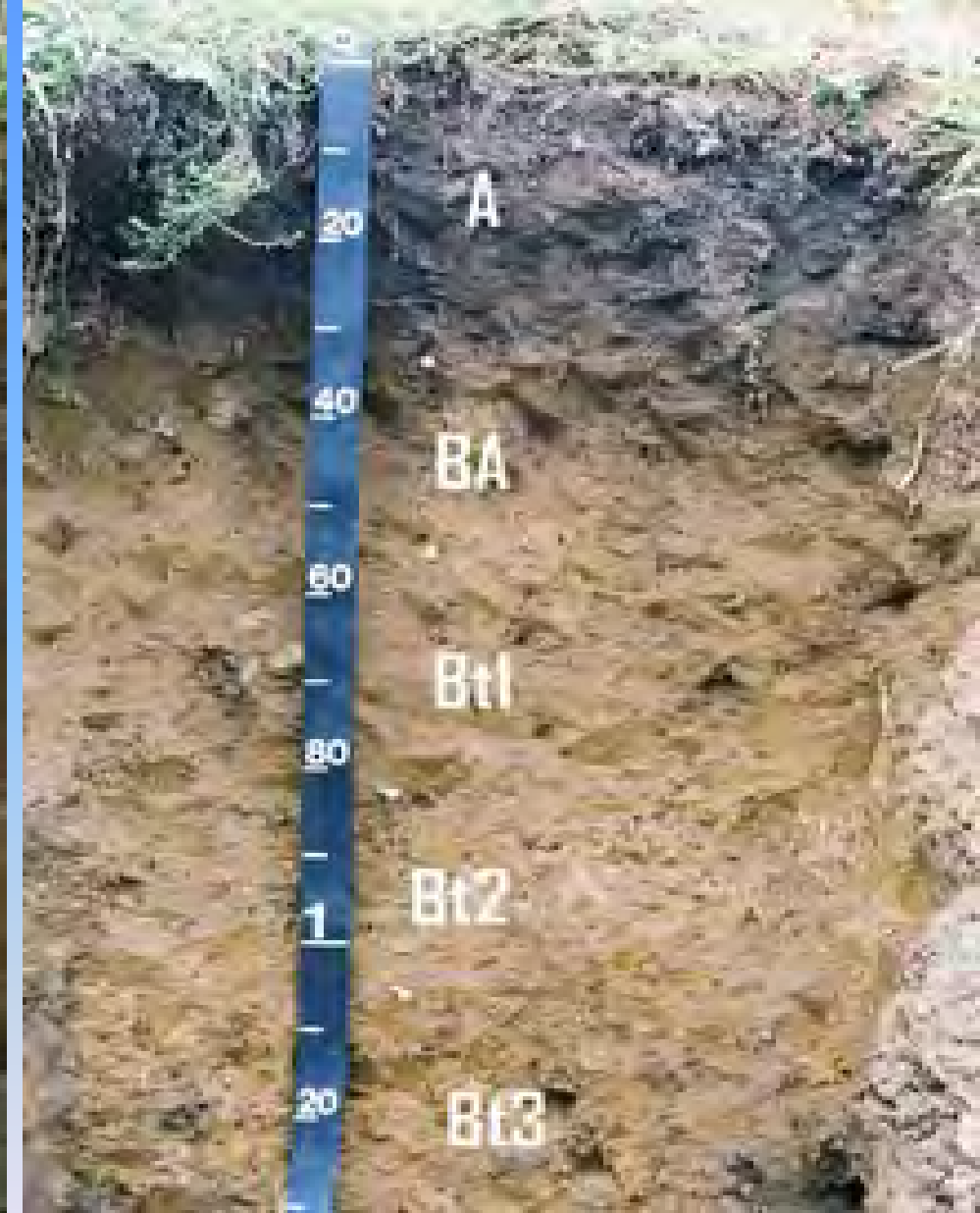
REVIEW/SUMMARY

1. What are the physical features used to differentiate between soils?
2. What are the colors used to describe surface soils?
3. What are the factors that determine surface soil colors?
4. What colors are used to describe subsoil?
5. What factors determine subsoil colors?
6. How do parent material, age, and slope determine soil color?

APPLICATION



#1



#2



#3



#4



#5



#6



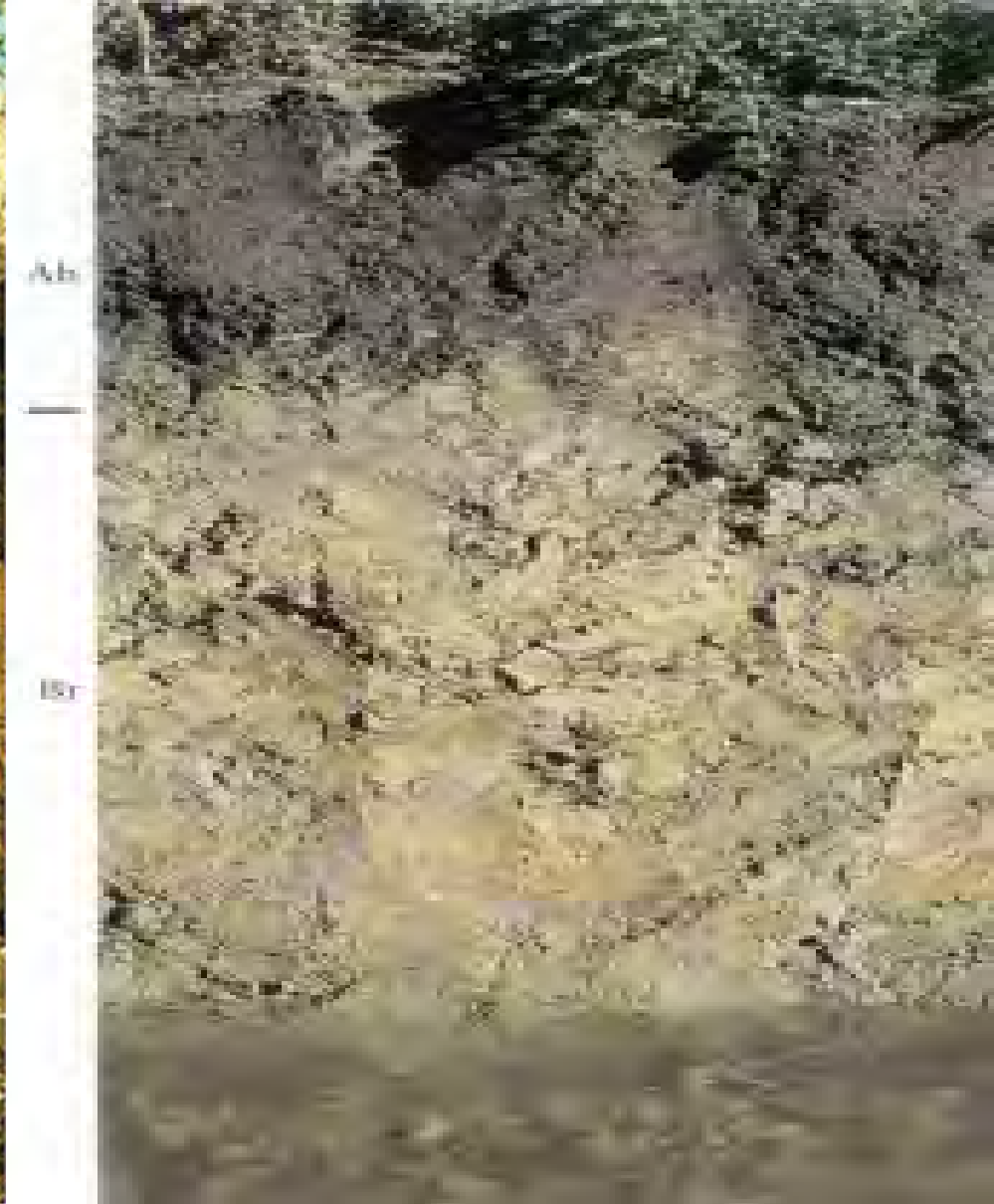
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