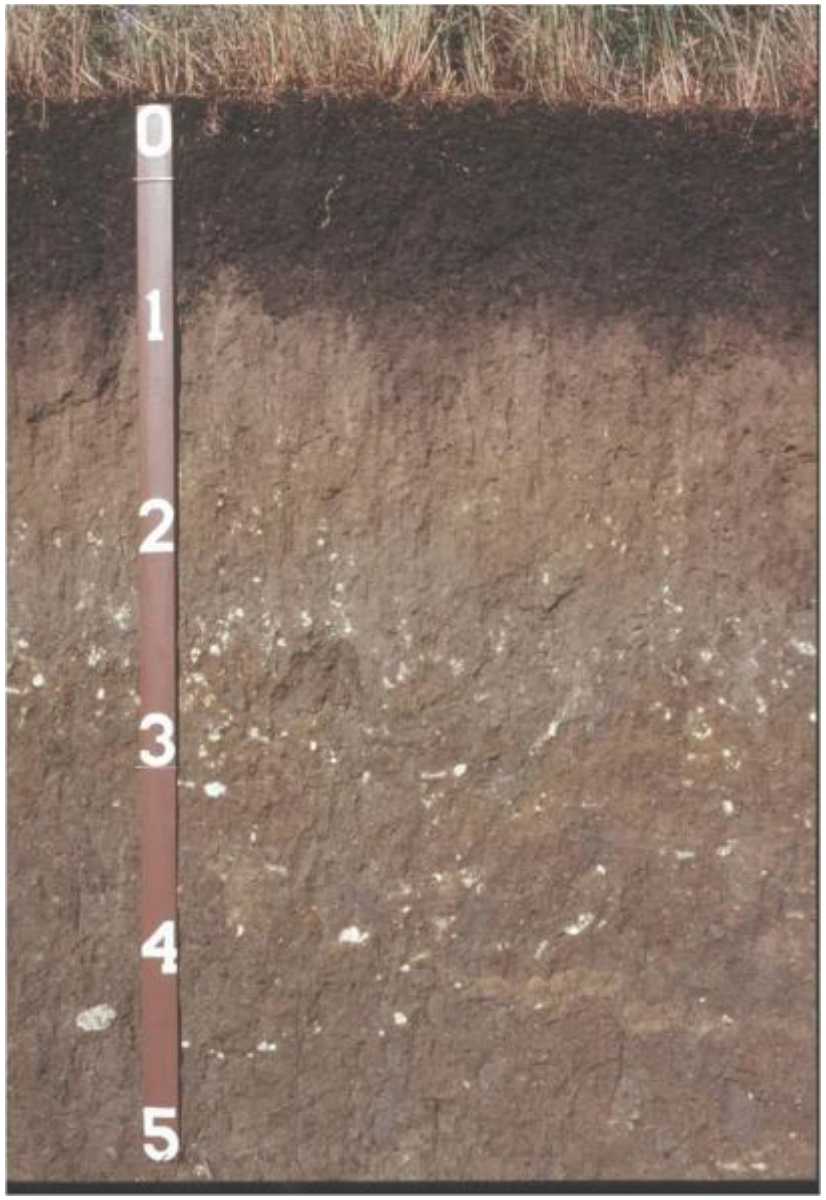
Soil Color

McIntosh Soil



Soil Color

- Probably the most obvious soil feature
- Munsell system color charts used to standardize colors
- Hue = the dominant spectral color (related to wavelength of light)
- Value = measure of degree of lightness or darkness (amount of light reflected)

More Soil Color

- Chroma = measure of purity or strength of spectral color
- Dominant (matrix) color = the color that occupies the greatest volume
- Mottling refers to repetitive color changes that cannot be associated to a soil property. Redoximorphic (redox) features are a type of mottling associated with wetness

Soil Color: Pigments in Soils

- Dark brown to black: humus/organic matter gives soil this color; topsoils (A horizon)
- Reds and yellows: iron oxide, subsoil horizons (B horizons) either red, yellow, oxidized (Fe^{+3}) iron well-oxidized (well-drained)
- Grey: reduced (Fe^{+2}) iron; water doesn't drain out, poor drainage; Fe is reduced, depleted
- Whitish or light grey: leached out horizons; other pigments (humus, iron oxides) have been leached away

Munsell system: soil colors matched to color chips in book– standardized way to describe soil color

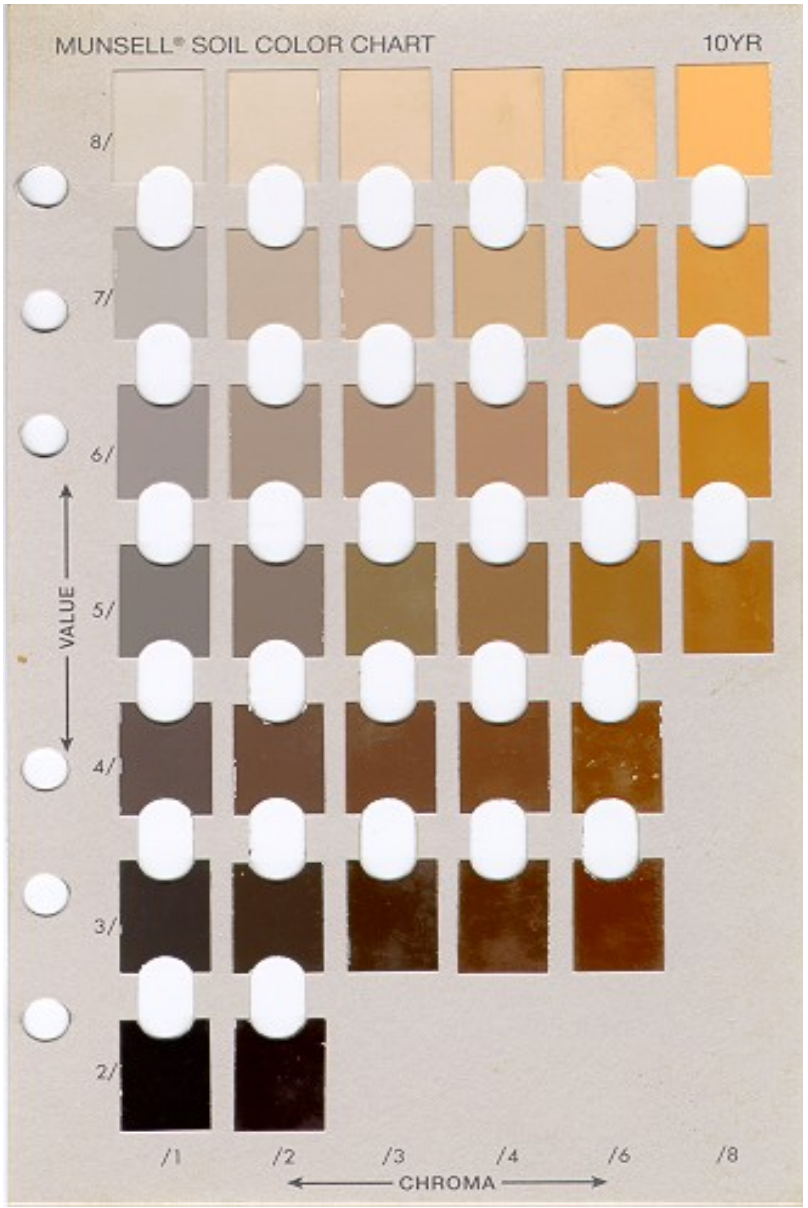
Munsell color chart:

“10YR 5/3”

hue

value

chroma



Soil Color

Waubay Soil

- <u>Dark brown to black-</u>

(A horizon) top soils, humus- decomposed organic material. A few percent of humus gives a brownish color and up to 5% the soil becomes black.

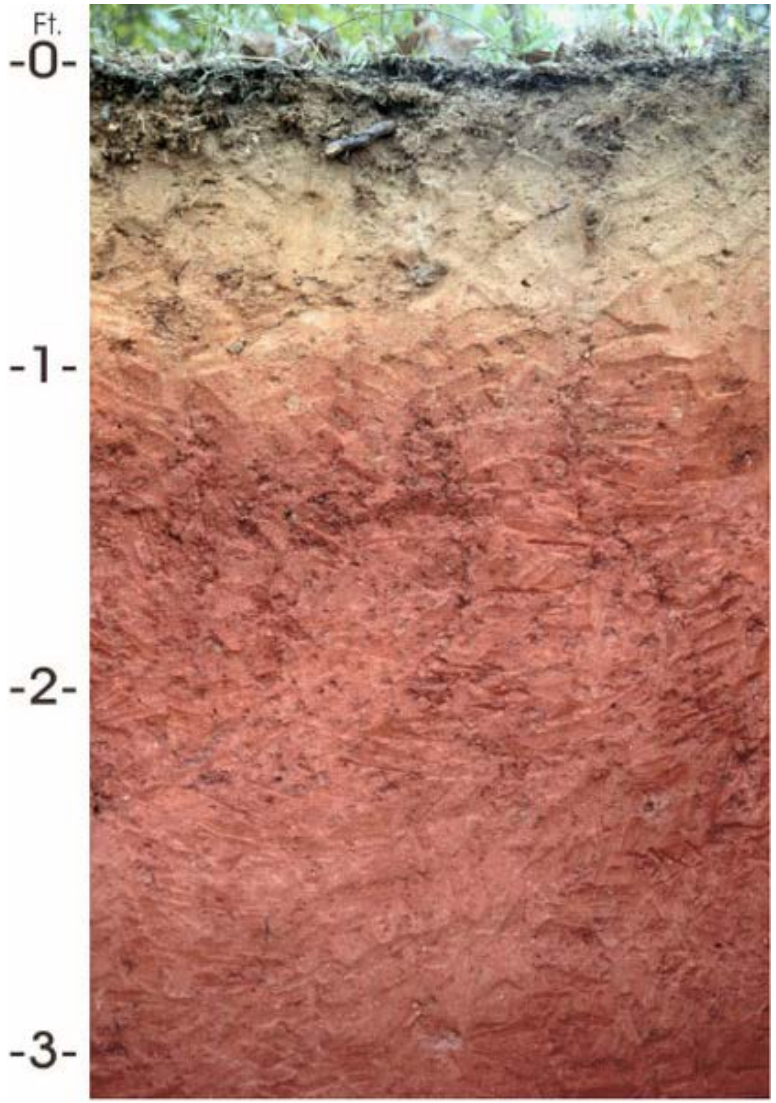
Soil Color

Alabama State Soil

- Reds and Yellows-

(B horizons) iron oxide formed during weathering,

- Fe^{+3} is well oxidized (well-drained)



Soil Color

Tonka Soil

- Grey colors are caused by reduced Iron (Fe^{+2})
- Water has excluded oxygen from diffusion into soil
- Other pigments are leached out from horizons (humus, iron oxides)

Redoximorphic Features

- Redoximorphic (oxidation/reduction) Features
  - –Indication that soil is saturated for some time during the year
  - –Redox **depletions** (reduction)
    - low chroma
      - Fe and Mn have been stripped from soil
  - –Redox **concentrations** (oxidation)
    - high chroma
      - Accumulation of Fe and Mn oxides