

ENVIROTHON STUDENT SOILS TRAINING - SOIL SURVEY BASICS (Rev. Oct. 2011)

Originally, a soil survey was in a book containing maps and text on soils in a particular area; soil surveys now are available digitally. Visit WebSoilSurvey at <http://websoilsurvey.nrcs.usda.gov/>

I. Maps – aerial photo base with lines and symbols indicating differing soil map units

II. Piedmont vs. Atlantic Coastal Plain

Piedmont – northern New Castle County, soils formed from bedrock

Atlantic Coastal Plain – south from Newark through the Delmarva Peninsula, soils formed from sediment deposits

III. Soil Series and Soil Map Units

- Soil series include soils that have a similar profile and characteristics (the surface texture may vary)
- Named for a nearby place where the soil was first observed and mapped
- Ex: Matapeake, Sassafras, Othello, Reybold, Elkton
- Not all soil map units have a series name = miscellaneous land type (ex: Udorthents, Urban Land)
- Some soil map units include several soils when they are too intermingled to map out separately = complex
- (ex: Glenelg-Wheaton-Urban land complex) Soil Map Unit Name includes a series name, texture, slope, and sometimes other properties such as rockiness, erosion class, etc. (ex: Fallsington loam, 0-2% slope is a soil map unit and Fallsington sandy loam, 0-2% slopes is another)
- Soil Map Unit symbol is used on soil maps
 - o First 2 letters represent the soil series name abbreviated
 - o 3rd letter is slope (may not have if there is only one soil phase, generally in DE, tidal marshes or floodplains)

Coastal Plain Slopes: A=0-2%, B=2-5%, C=5-10%, D=10-15%, E>15%

Piedmont Slopes: A=0-3%, B=3-8%, C=8-15%, D=15-25%, E=25-45%

IV. Slope

- Change in elevation, up or down, expressed as a percentage
- Example: a point on the ground 100 feet away from where you are standing is 5 feet higher.
Slope = change in elevation / distance x 100 = 5'/100' x 100 = 5%

V. Soil Colors (see Munsell charts)

- Page (5R...2.5YR....5Y....Gley) = Hue
- Vertical = Value
- Horizontal = Chroma
- Notation = Hue value/chroma
- Opposite page gives name of color
- Example: 7.5YR 5/6 = Strong Brown

VI. Landscape Position

- See attached diagram
- Upland, Upland depression or drainage way, Terrace, or Floodplain

VII. Land Capability Class

A. Cropland and pasture uses

B. Number followed by a letter (except Class I)

C. The higher the number the more limited for use:

- I---No limiting factors, nearly level
- II---Gently sloping, or moderately well drained, or moderately deep, or low available water capacity
- III--Strongly sloping, or somewhat poorly drained, or shallow, or very low available water capacity
- IV--Moderately steep, or poorly drained, or occasionally flooded
- V---Nearly level; but very stony, numerous rock outcrops, very poorly drained or frequently flooded

- VI--Steep, or gently sloping through steep with a very stony surface or rock outcrops
- VII—Very steep, or very shallow soils
- VII--Swamp, tidal marsh, coastal beach, >90% rock outcrops, or urban land

D. Subclasses

- e = risk of erosion
- w= wetness
- s = shallow, droughty, sandy or stony
- c = climate too cold or too dry

VIII. Charts

Forest productivity; Crop yields for common crops grown; Prime Farmland; Available Water Capacity.....

VIII. Site Suitability Questions

A. Charts list limitations for a use (septic tanks, homes with basements, streets... lawns) if you know the soil map unit. See page 6 in sample test.

B. If you do not know the soil map unit and you are working from a soil profile and previous questions: Start by circling an answer for each category (slope, depth to gray, texture...). The most severe item controls the suitability for a use. See page 5 in Sample Test.