Control Sections
Objectives

• Explain the purpose of the family category in Soil Taxonomy.

• List at least five kinds of control sections used in Soil Taxonomy.

• Use Chapter 17, Keys to Soil Taxonomy to determine various control sections for class differentiae.
Rationale for family category and class differentiae

- System integration of physical and chemical properties important for plant growth and engineering use.

- A collection of soil properties is condensed into just a few classes that conjure up a superb mental construct of the functional capacity of a soil.
There are several control sections in Soil Taxonomy

• Subgroup, great group, suborder, order
  – Moisture

• Family
  – Particle-size classes or their substitutes
  – Mineralogy
  – Cation-exchange activity
  – Temperature
  – Calcareous and reaction classes
  – Classes of coatings
  – Classes of permanent cracks

• Series control section
There are several control sections in Soil Taxonomy

- Subgroup, great group, suborder, order
  - Moisture
- Family
  - Particle-size classes or their substitutes
  - Mineralogy
  - Cation-exchange activity
  - Temperature
  - Calcareous and reaction classes
  - Classes of coatings
  - Classes of permanent cracks

- Series control section

Always indicate which “kind” of control section you are talking about!
A. Permafrost or root-limiting layer within 36 cm of the mineral soil surface.
Particle Size, Mineralogy, Cation-Exchange Activity, and Reaction

B. Andisols

36 cm

100 cm

Organic layer w/ andic properties

Root-Limiting Layer
C. Alfisols, Ultisols, Aridisols, and Mollisols (except lamellic subgroups) that have the top of an argillic, kandic, or natric horizon within 100 cm and its lower boundary at a depth of 25 cm or more below the mineral soil surface or that are in Arenic or Grossarenic subgroups.

1. With a strongly contrasting particle-size class

2. All parts of the argillic horizon within or below a fragipan
Particle Size, Mineralogy, and Cation-Exchange Activity Classes

C. Continued

3. Fragipan at a depth of < 50 cm below top of argillic horizon

4. Upper 50 cm or all of the argillic if less than 50 cm thick
Particle -Size Classes, Mineralogy Classes, and Cation-Exchange Activity Classes

D. Alfisols, Ultisols, Aridisols, and Mollisols that are in a lamellic subgroup OR have the top of an argillic horizon below 100 cm
Particle Size, Mineralogy, Cation-Exchange Activity, Reaction, Coatings (on Sands), and Classes of Cracks

E. Other soils that have the base of the argillic horizon at a depth of less than 25 cm

F. All other mineral soils
Control Section for Calcareous Classes
Control Sections for Calcareous Classes

1. Soils with a densic, lithic, or paralithic contact 25 cm or less below the mineral soil surface

2. Soils with a densic, lithic, or paralithic contact between 26 and 50 cm
Control Sections for Calcareous Classes

3. All other listed soils
Control Sections for Soil Temperature Classes

Densic, lithic, or paralithic contact

50 cm
The series control section for mineral soils without permafrost extends from the soil surface to the **shallowest** of the following:

1. A lithic or petroferric contact: or  
2. 25 cm below a densic or paralithic contact or 150 cm from the soil surface, whichever is shallower, if there is a paralithic contact within 150 cm: or
3. 150 cm, if the bottom of the deepest diagnostic horizon is less than 150 cm from the soil surface; or

4. The bottom of the deepest diagnostic horizon or 200 cm, whichever is shallower if the bottom of the deepest diagnostic horizon is more than 150 cm from the soil surface.
The series control section for soils that have permafrost within 150 cm of the mineral soil surface extends from the soil surface to the shallowest of the following:

1. A lithic of petroferric contact;
2. 100 cm if depth to permafrost is less than 75 cm;
3. 25 cm below the top of the permafrost if depth to permafrost is 75 cm to 125 cm; or

4. 25 cm below a densic or paralithic contact that is within 125 cm; or

5. 150 cm if permafrost, densic, and paralithic contact are all below 125 cm
Summary

• The family category provides information for engineering use and agronomic use.

• Several kinds of control sections are used to ascertain a variety of properties, including moisture, temperature, various family class differentiae, and series control sections.

• Always indicate the kind of “control section.”