

Exam III  
Wednesday, November 7<sup>th</sup>  
Study Guide Posted Tomorrow  
Review Session in Class on Monday the 4<sup>th</sup>

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Soil Taxonomy and Classification

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**Diagnostic Horizons**

<u>Epipedons</u>	<u>Subsurface</u>
Mollic	Albic
Umbric	Kandic
Ochric	Argillic
Histic	Spodic
Melanic	Oxic
Plaggen	
Anthropic	

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Surface Horizons:

- Mollic- thick, dark colored, high %B.S., structure
- Umbric – same, but lower B.S.
- Ochric – pale, low O.M., thin
- Histic – High O.M., thick, wet, dark

Sub-Surface Horizons:

- Argillic – illuvial accum. of clay (high activity)
- Kandic – accum. of clay (low activity)
- Spodic – Illuvial O.M. accumulation (Al and/or Fe)
- Oxic – highly weathered, kaolinite, Fe and Al oxides
- Albic – light colored, elluvial, low reactivity

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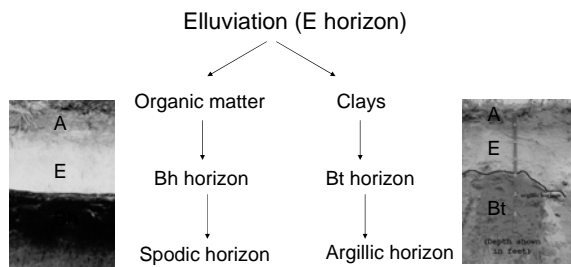
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### Elluviation and Illuviation



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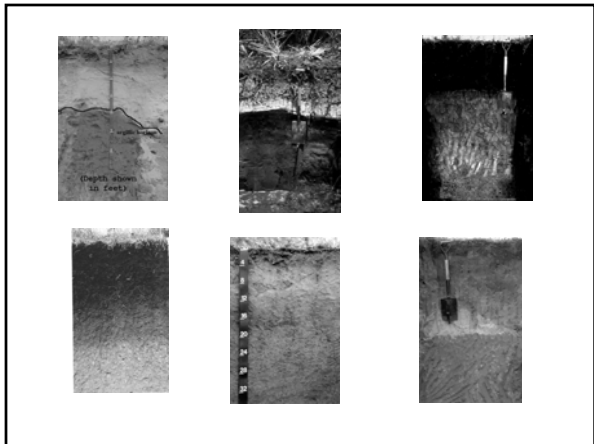
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## Soil Taxonomy

Diagnostic Epipedons  
Diagnostic Subsurface horizons  
Moisture Regimes  
Temperature Regimes  
Age  
Texture  
Depth

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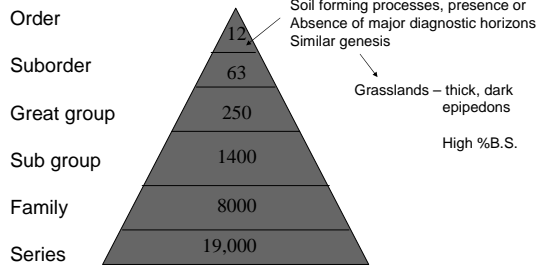
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## Soil Taxonomy



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## Soil Orders

Entisols  
Histosols  
Inceptisols  
Andisols  
Gelisols  
Alfisols  
Mollisols  
Ultisols  
Spodosols  
Aridisols  
Vertisols  
Oxisols

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## Soil Orders

Entisol	Ent-	Recent
Histosol	Hist-	Histic (organic)
Inceptisol	Incept-	Inception
Alfisol	Alf-	Nonsense
Ultisol	Ult-	Ultimate
Spodosol	Spod-	Spodos (wood ash)
Mollisol	Moll-	Mollis (soft)
<hr/>		
Oxisol	Ox-	oxide
Andisol	And-	Ando (black)
Gelisol	Gel-	Gelid (cold)
Aridisol	Arid-	Arid (dry)
Vertisol	Vert-	Verto (turn)

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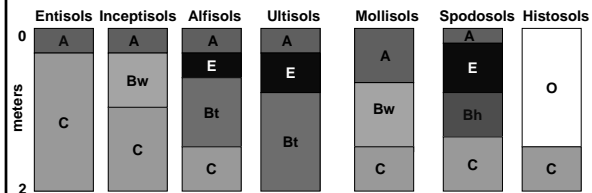
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## Soil Orders in Florida

- Entisols – little development, usually A-C horizons, ochric epipedon
- Inceptisols – A little more development, Bw horizons, ochric, umbric epipedon
- Alfisols – Argillic/Kandic horizon (Bt) less than 2 m, base saturation is > 35%
- Ultisols – Argillic/Kandic horizon (Bt) less than 2 m, base saturation is < 35%
- Mollisols – Mollic epipedon, dark, high organic matter
- Spodosols – Spodic horizon (Bh), ochric, umbric epipedon
- Histosols – Organic soil, histic epipedon




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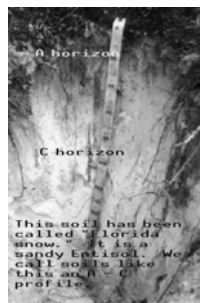
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## Entisols

Young Soils  
Weakly developed  
Sandy or clayey  
Ochric Epipedon  
A – C profiles




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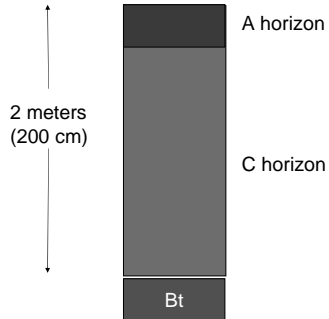
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Taxonomic Peculiarity



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Entisols



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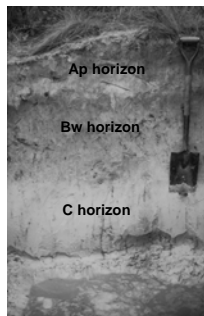
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Inceptisols

Little Development  
Ochric or Umbric epipedon  
One or more subsurface horizons  
Weakly developed  
Contains many unweathered minerals



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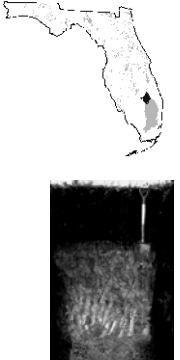
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### Histosols

- Histic epipedon
- Peat or muck
- > 20% organic matter
- Agriculturally valuable
- Sometimes used as fuel
- Often over impermeable material



Histosols - Everglades Agricultural Area South Florida  
Wetland vegetable region




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### Histosols




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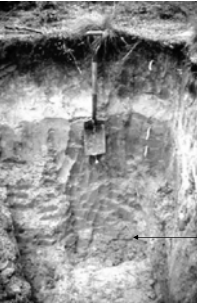
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### Alfisols



**Mollic/Umbric/Ochric epipedon**

- ← A horizon
- ← E horizon
- ← Bt horizon (argillic, kandic)  
base saturation > 35%
- ← Btg horizon

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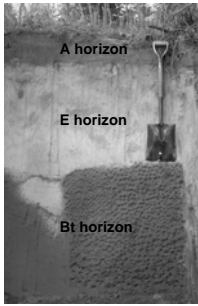
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## Ultisols



Mollic/umbric/Ochric epipedon  
Argillic or Kandic horizon  
Base saturation < 35%

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## Ultisols and Alfisols



Mixed Hardwood Forests

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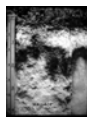
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## Spodosols



Associated with acidic vegetation  
Subsoil accumulation of organic matter  
with aluminum and/or iron  
Formed under Wet acidic conditions  
Poorly or Very poorly drained  
Pine Flatwoods

State Soil of Florida

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Spodosols



Pine Flatwoods (wet, acidic)

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Mollisols



**Mollic Epipedon**

**High organic matter**  
**Thick surface horizon**  
**Highly productive**

Many with argillic  
Poorly-drained  
Surface % B.S. > 50%

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Mollisols



Grasslands

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## Soil Orders

Weathering and development

slight



Strong

Entisols  
Histosols Inceptisols Andisols Gelisols  
Aridisols Vertisols  
Alfisols Mollisols  
Ultisols Spodosols  
Oxisols

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## Geographic Distribution




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### Florida Soil Orders

Spodosols	8.4 million acres
Entisols	7.5
Ultisols	6.9
Alfisols	4.6
Histosols	4.0
Inceptisols	1.0
Mollisols	1.0

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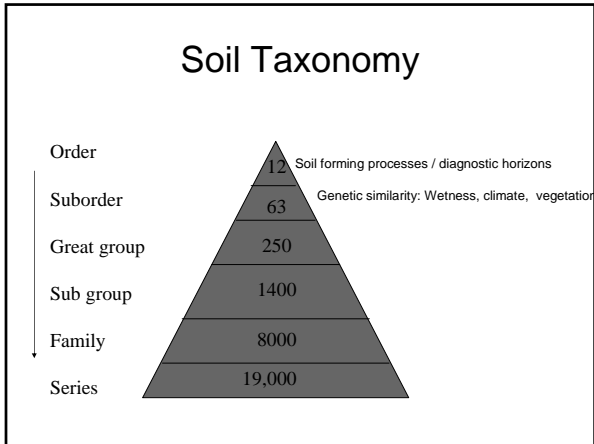
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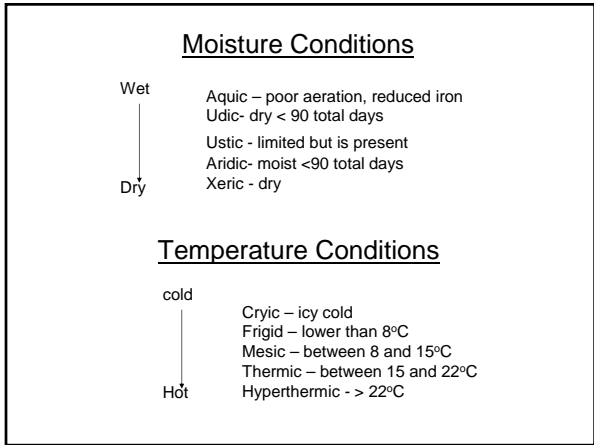
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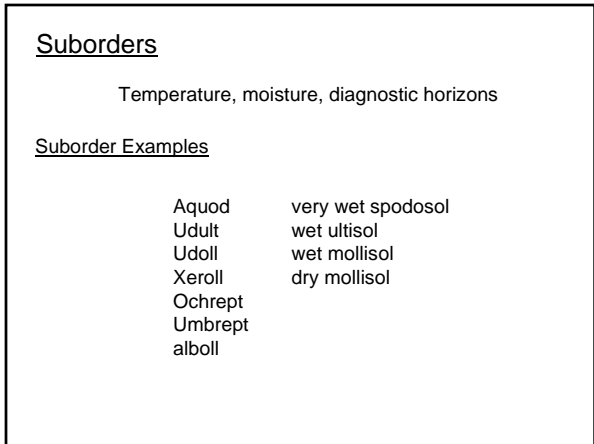
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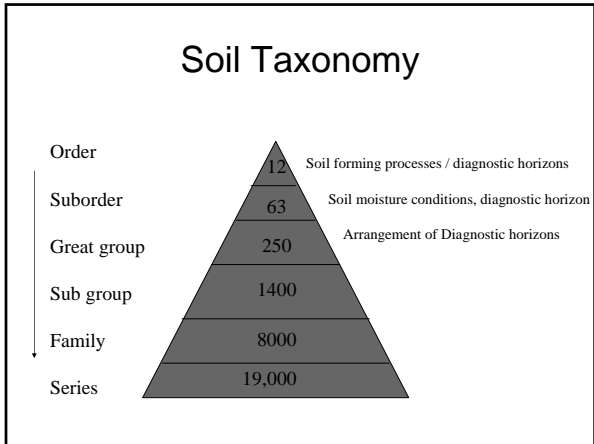
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### Great Groups

Based on diagnostic horizons and their arrangements or other features like age, color, texture

- Arg - argillic horizon present
- Pale - old
- Kand - kandic horizon present
- Hapl - minimum horizonation
- quartzzi – quartz sand
- Hum - humid

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<u>Suborder</u>	<u>Great Group</u>
Udult	paleudult
Aquoll	argiaquoll
Udalf	paleudalf
Udult	hapludult

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### Sub group

Expresses the core concept of the great group

Moisture, sandiness, depth, color

Typic  
Arenic  
Grossarenic  
Aquic  
rhodic

Typic hapludult  
Grossarenic quartzipsamment

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### Families

Properties important to growth of plant roots

<u>Particle size</u>	<u>mineralogy</u>	<u>temperature °C</u>
Sandy	Siliceous	Frigid < 8
Loamy	Kaolinitic	Mesic 8-15
Fine loamy	Smectitic	Thermic 15-22
Clayey	Oxidic	Hyperthermic > 22

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### Series

Horizon number, order, thickness, texture, structure,  
Color, Organic matter, pH, accumulations

Order	Sub-order	G. Group	Sub-group	Family	Series
Mollisol	Aquoll	Argiaquoll	typic Argiaquoll	typic argiaquoll loamy siliceous	Brookston Cordova Westland

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Alachua County

Apopka loamy, siliceous, hyperthermic grossarenic paleudult  
Ledwith fine, smectitic, hyperthermic mollic albaqualf  
Surrency loamy, siliceous, thermic, arenic paleaquult  
Pomona sandy, siliceous, hyperthermic, ultic, haplaquod

order	paleudult
Suborder	albaqualf
great group	
sub-group	paleaquult
family	
	haplaquod

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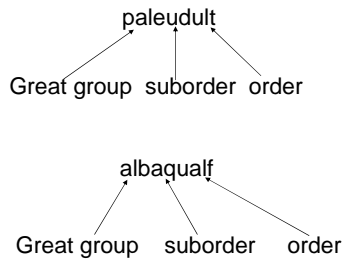
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Alachua County



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