

# Research Priorities Committee

South Regional NCSS Meeting  
March 21-25, 2012  
Bowling Green, KY

## Team

### Co-Chairs

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### Participants

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Soil Ecosystems committee

## Charges

1. Recommend research that is regionally important.
2. Recommend research that would assist in addressing short-term soil survey mission needs; what are the current gaps in knowledge?
3. Recommend research that would contribute to Ecological Site Inventory and Dynamic Soil Property Initiatives.
4. Recommend research that would assist in addressing urban soil properties
5. Identify global research areas that would benefit from pedological research and inclusion of soil survey concepts and data.

## 1. Recommend research that is regionally important.

### **Shawnee Hills loess soils project (IL, KY, IN)**

- Assess factors controlling soil development and spatial variability.
- Develop model of soil distribution on landscapes.
- Evaluate water movement through the landscape.
- Determine variables that serve as markers of soil type, pedogenesis, and water movement.
- Determine factors influencing formation and location of fragipans on landscapes.
- Establish baseline elemental soil profile signatures and compare elemental signatures by geomorphic component.
- Study the influence of landscape position on the accumulation or loss of soil carbon.

### **Plinthic project (southeast U.S.)**

- Using electric resistance tomography to study water tables

### **Mica**

- Need data on compaction, erosivity, interpretations

### **Gypsum**

- TX, OK – getting data on the mid-range gypsum contents in soils

### **Groundwater Spodosols**

- Water movement/dynamics

### **Elevate our Cooperators**

- Cooperators can use NRCS funding as seed money collect initial data.
- With data, Cooperators can compete for funding from non-traditional sources.

### **Focus on projects that cross-cut across disciplines**

- Wastewater treatment (graywater)
- Urban-suburban soils
  - Udothents-Urban land map units do not provide any information as to soil properties or interpretations
- Food security and nutrition

## Charge 1. Recommendations

1. Continue funding multiple projects.
2. Increase funding levels per project; currently four at \$40,000 per project
3. Mix of regional and global priority areas that are fundable versus areas that address NCSS needs.

## 2. Recommend research that would assist in addressing short-term soil survey mission needs; what are the current gaps in knowledge?

### Soil Data Join Recorrelation (SDJR)

- Table until 2013 National NCSS Conference to allow for the process to define areas that need further study

### Benchmark soils

- Good concept, inconsistent application
- Continue to emphasize benchmark soils data cleanup – student projects, student interns
- Redefine / reevaluate the importance of benchmark soils; not just what they are but why they are (ecologically, geographically)

## Charge 2. Recommendations

### 1. Soil Data Join Recorrelation (SDJR)

- a. Table until 2013 National NCSS Conference to allow for the process to define areas that need further study.

### 2. Benchmark soils

- a. Continue to emphasize benchmark soils data cleanup; can be accomplished by undergraduate student projects and/or student summer NRCS interns.
- b. Redefine / re-evaluate the importance of benchmark soils; not just what they but why they are important (ecologically, geographically, etc).

### **3. Recommend research that would contribute to Ecological Site Inventory and Dynamic Soil Property Initiatives.**

#### **Minimum datasets**

- Needed for eastern forests
- PLSS veg surveys from 1800's

#### **Threshold transitions from one state to another**

#### **Spatial-temporal variability in Dynamic Soil Properties and Ecological Sites**

#### **Need new methods for estimating infiltration**

#### **Soil disturbance**

- How fast will the soil recover – rates of change

### **Charge 3. Recommendations**

1. Research in to what are the threshold transitions from one state to another.
  - a. Spatial/temporal variability of dynamic soil properties;
  - b. Variability predictability, e.g., sample more with soil properties that have higher variability.
2. Research needed into developing new methods for estimating infiltration.

#### 4. Recommend research that would assist in addressing urban/suburban soil properties.

##### **Predicting compaction**

- Relate to runoff

##### **Stormwater design**

- How and where to evaluate the soil (A vs B vs C horizons, etc)
- Dispersal of clay

##### **Low-impact development**

- Objective is to maintain hydrology; soils generally are not considered

##### **Very fine sands and silts**

- Distinctions between vfs and silt
- Wind erosion; compaction; infiltration

##### **Urban development**

- Effects on surface and drinking water quality, quantity, and distribution

##### **Loss of prime farmlands soils**

- Occurring at an ever accelerating pace
- Important but not a research topic

##### **Wastewater treatment and dispersal**

- Elevated to regional/global research issues

##### **Acid sulfate soils**

- Are they an issue in the South Region?

#### Charge 4. Recommendations

1. In suburban areas with various housing/industrial densities, research is needed to understand runoff and compaction; best placement/design of rain gardens
2. Research is needed on soil quality at the suburban – rural interface, e.g., for rural areas adjacent factories/refineries, e.g. effect on soil properties (heavy metals) in community gardens.

## **5. Identify global research areas that would benefit from pedological research and inclusion of soil survey concepts and data.**

### **Soil science/survey needs to be at the table**

- Pedologists have a unique skill set

### **Encourage NRCS to communicate global research issues and opportunities to Cooperators**

- Global Soil Map, Global Soil Partnership (FAO), US Study Center (Sydney), Soil Security Initiative

## **Charge 5. Recommendations**

1. Pedologists have a unique skill set in soil landscapes; as such, soil science/survey needs to be involved in global research areas.
  - a. Encourage NRCS to communicate global research issues and opportunities to Cooperators. For example, Global Soil Map, International Soil Partnership, US Study Center (Sydney), Soil Security Initiative.
  - b. Soil scientists have expertise in nutrient dynamics and need to participate in regional and global discussions and research in this arena.

## **Additional Recommendation**

1. Most of our research priorities need input from other committees.
2. Solution is to schedule joint committee meetings during the committee meeting sessions.