EPSc 413 Homework #4

Due March 27, 2017

Write answers on separate sheets of paper. Please only write on one side of the page to make grading easier. Answers may also be typed.

1. *This question asks you to explore the differences in degradation rates and nutrient release from different plant litters.*

Plant litter is often used as "green manure" to enhance soil quality and increase available nutrients. Consider the following two plant litters:

Black oak leaves: C:N ratio = 55

Soybean residue: C:N ratio = 20

Describe how nitrogen release to soil after addition of each of these materials would differ. (**15 pts**)

2. *This question asks you to review key features of hydric soils.*

Describe two indicators of hydric soils, including an explanation of why each indicator occurs under the conditions found in flooded soils. **(15 pts)**

3. *This question asks you to explore how typical soils and wetland soils differ in how they process carbon and accumulate organic matter.*

Explain how carbon cycling differs between a typical, well-drained soil and a soil in a wetland. Make sure to address organic matter production and deposition and the relative rate and major products of its decomposition. (**30 pts**)

4. *This question requires you to become familiar with salt-affected soils.*

a. Explain the differences between the three classes of salt-affected soils. (**15 pts**)

b. What subsurface horizon is common to sodic soils? (**10 pts**)

c. Describe the pH, structure, and hydraulic conductivity of sodic soils and how this affects plants. (**15 pts**)