



# Water Quality UPDATE

Newsletter of Extension Water Quality Programs

February 2005

This is the second in a series of articles on septic systems. This issue highlights the soil profiling work of OCES Soil Morphologist Dr. Brian Carter. Information contained in this article, including Figure 1, was adapted from the ODEQ/OSU Soil Classification Manual (Carter, B. 2003. OSU Dep't of Plant & Soil Sciences) and from ODEQ's 2001 Annual Report.

## SSI: Septic System Investigations

Soil profiling...it sounds like a high-tech, crime-solving method on the latest episode of TV's CSI. In reality, it is a basic soil science technique being used to prevent septic system problems.

Urban sprawl into rural areas means construction of new homes and new septic systems. In Oklahoma, new systems are required to be inspected by the Dep't of Environmental Quality (DEQ) or a Certified Installer.

Soil profiling is at the heart of DEQ's program to improve design and placement of new systems. The program, developed in conjunction with OCES Soil Morphologist Dr. Brian Carter, has been used to train DEQ environmental specialists and others in proper site assessment.

Traditionally, percolation tests that measure water absorption rates have been utilized for site evaluations. Perc tests view soil as a giant sponge and are used to determine how much water the "sponge" can soak up. However, this thinking ignores one of the primary functions of a septic system: wastewater treatment.

Soil profiles provide the "in-depth" analysis of the site that is needed to consider this aspect of the system. Instead of a sponge, they view the soil as a wastewater treatment filter where soil organisms break down organic debris and inorganic materials are modified or absorbed through chemical interactions (see Figure 1).

Compared to perc tests, soil profiles are quicker and unaffected by weather. They also provide a more detailed picture of the site, increasing the chances for a problem-free septic system.

Profilers are trained to gauge the ability of the soil to support good septic system performance, based on soil texture and soil structure. These characteristics help determine how water moves through the soil, which affects the ability of soil organisms to break down pollutants in the water.

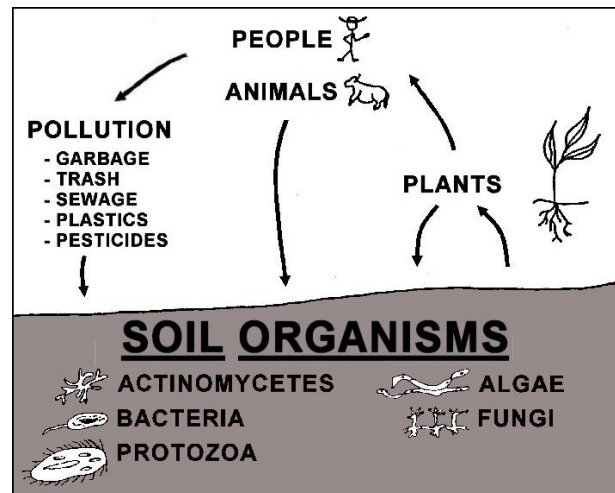


Figure 1. Soil is a dynamic living filter fostering organisms that decompose and recycle waste.

Most of this breakdown occurs in the soil just below the absorption trench of the septic system. Soil profilers measure the depth to bedrock or water-saturated soil layers at the site to ensure there is enough good soil (36 inches) for treatment to occur. If there is, the profiler then uses the other soil information to determine the length of trench needed for the system, based on the number of bedrooms in the residence.

In an effort to reduce the number of failed septic systems, DEQ called upon Dr. Carter to teach soil profiling to their specialists. They are continuing to work with him to develop training workshops for other technical personnel around the state, including private contractors.

For those in need of a site assessment, DEQ maintains a list of certified Soil Profilers at (<http://www.deq.state.ok.us/ECLSnew/>). Contractors and others interested in future training events should contact Dr. Carter (405.744.6414, [bjc@mail.pss.okstate.edu](mailto:bjc@mail.pss.okstate.edu)) or DEQ (405.702.6100).



Extension programs in thirteen states have joined forces in the Southern Region Water Quality Program (SRWQP, <http://srwqis.tamu.edu/>). The participating states are shown in Fig. 2 (below).

SRWQP efforts have centered on four programs in each of three focus areas; 1) agricultural pollution prevention, 2) rural environmental protection, and 3) watershed management. Each State decides which of the twelve programs are most critical to their mission.

Ten of the SRWQP programs address water quality issues in Oklahoma. The complete list of OCES-WQ programs is as follows:

- Animal Waste Management
- Community Wastewater & Solid Waste
- Drinking Water & Human Health
- Nutrient Management
- Onsite Wastewater Management
- Pond Management<sup>†\*</sup>
- Rural/Urban Interface Env. Management
- Water Quality Education for Agricultural Producers
- Watershed Assessment
- Watershed Education Network<sup>\*</sup>
- Watershed Restoration

<sup>†</sup>OCES-WQ focus, not a regional program

<sup>\*</sup>in cooperation with Langston University

The OCES-WQ office is putting teams together to facilitate each of these programs in the state. Please contact us if interested in participating (405.744.5653, or email [smolen@okstate.edu](mailto:smolen@okstate.edu)).

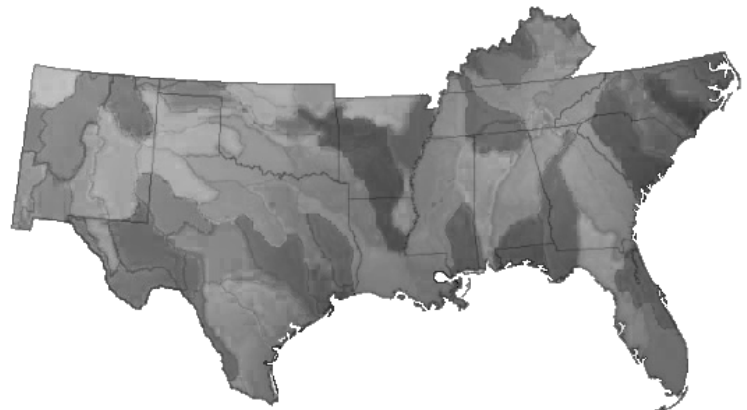
### *OCES Water Quality Program: In-Service Training*

On Jan 24, several members of the OCES-WQ team met to review goals and strategy for the coming year. In-Service Training was one of the main discussions.

Several potential topics were presented, with the following preliminary list developed:

- Pond Management (Williams/Beem/Fram)
  - aquatic plant ID, pond maintenance, leaking ponds
- Animal Waste Management (Zhang)
- Solid Waste (Kimball)
- On-site Wastewater (Carter)
  - soils assessment, septic system operation and maintenance

The team would welcome comments on these or suggestions for additional topics to consider. Please contact the OCES-WQ office with your input (405.744.5653, or email [smolen@okstate.edu](mailto:smolen@okstate.edu)).



**Figure 2. Map of states participating in the USDA-CSREES Southern Region Water Quality Program.**

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Oklahoma State University, U.S. Department of Agriculture, State and Local governments cooperating. Oklahoma Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, sex, age or disability and is an Equal Opportunity Employer.