

## New York Soil Health Trailer Used in Trainings on Compaction and Soil Health in Northeast Pastures

By: Diane Frances

Recently the NY Soil Health Trailer was used in a “Train the Trainer” program taught by Fay Benson, Larry Hepner (soil structure consultant) and Bob Schindelbeck (Director of Cornell’s Soil Health Lab). There were 17 grazing educators that attended the two trainings. The training were the first part of a Northeast Sustainable Agriculture Research & Education (NE SARE) project to educate and research on the topic of soil compaction in northeast pasture soils.

Compaction is an important issue in agriculture affecting soil health and productivity. Compacted soils, which result from heavy tractor and animal use over time, have less water and air flow and are therefore less productive. Identifying compaction is the first step, and Fay is working with farmers and ag educators to develop tools that he hopes will lead to improved pasture management and therefore more sustainable farms.

Fay’s idea for this NE SARE project is to use a soil penetrometer to measure soil penetration resistance in the fence line of a pasture where no livestock compaction occurred and within the grazing area where compaction is likely in order to develop tools to help farmers better identify compaction and be able to take necessary action. The morning sessions were presentations and discussions led by Fay, Bob, and Larry and in the afternoon they were in the field at two farms using the penetrometers to measure compaction and examining mini profiles to identify and describe soil structures.

Fay has a number of responsibilities as Small Dairy Support Cornell University SCNY Regional Team, Education Coordinator NY Dairy Grazing Apprenticeship, and Project Manager NY Organic Dairy Initiative. He also travels to many farm events with the Soil Health Trailer putting on demonstrations to show how healthy soils improve infiltration and prevent runoff.

Bob Schindelbeck is the Director, Cornell Soil Health Laboratory Department of Soil and Crop Sciences Cornell University. Bob presented the work going on at Cornell’s Soil Health Lab on the physical, chemical, and biological properties of soil, how they are measured in the lab and the interpretations on how to improve soil health.

Larry’s role was to explain how to describe soil structure based on NRCS terminology. Structure is how the sand, silt, and clay fit together to form aggregates. Structure is described using terms for type (granular, subangular blocky, platy), grade (weak, moderate, strong, i.e. how visible the individual structural units are) and class (fine, medium, coarse, i.e. size of the granule, block, or plate). Typically surface soil layers (horizons) have granular structure which is very good for infiltration, water movement, and oxygen and carbon dioxide exchange. Granular structure usually produces maximum growth of plants. When compaction occurs either by livestock or equipment the granules are crushed and converted to plates. Platy structures impede water movement, stay wet longer, and have poor oxygen and carbon dioxide exchange. All in all a much poorer environment for plants resulting in less growth.

Compaction in pastures and farm fields is difficult to avoid. The good news is that a healthy soil (physical, chemical, and biological properties in balance) allows a soil to be much more resilient when it comes to compaction. Through field work, correlating penetrometer reading and moisture levels, Fay is

working to develop ways that farmers and ag educators can better identify soil compaction at any time of year and take appropriate action to address the compaction for improved soil health and farm performance.



Both days saw some rain but that didn't deter the group of grazing educators. It was good to be out in the early grazing season.



Larry Hepner shows how to identify "Platy" structure in the pasture soil. When this forms it can restrict roots, water, and air from lower depths of the soil.