

Hardy Farm hosts soil health workshop

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By Nicole Carter Advertiser Democrat

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FARMINGTON — About a dozen farmers gathered at a workshop to learn about the impact that grazing has on soil health, and ways to improve and maintain it. The session was led by Rick Kersbergen of The University of Maine Cooperative Extension and Fay Benson of Cornell Cooperative Extension in New York.

The two presenters gave demonstrations that highlighted the differences between healthy, aerated soil and overgrazed, compacted soil. Kersbergen showed three types of root boxes, two-foot tall stands with Plexiglas front, to display the effect that cover crops make to correct soil compaction. Each root box contained Radishes, millet, and a rye/red clover combination, all with five weeks of growth.

“Radishes have deep root systems,” said Kersbergen. “It makes a good fall cover crop, as it will penetrate through compacted soil, and grows well in areas with bare ground. And it can be harvested or grazed by livestock. Millet improves drainage and pulls up nitrogen from the soil. Rye has a shallower root system, while red clover grows deeper. The rye provides cover to the clover while it establishes itself and takes root to loosen the soil.

“While radishes grow well in fall and can overwinter, millet is an option often used for warm-weather cover crops. Rye and clover work well in heavier clay-like soil conditions.”

Healthy soil contains up to 4 billion organisms. Forty percent of those organisms are used by plants to nourish themselves, and the other 60% are used to feed the organisms in a circular chain. Roots of healthy plants are critical to the process – aerating the soil and providing aggregate structure to support the organisms, which consist of worms, bacteria, insects and micro nutrients.

Benson demonstrated how different soils and cover affect rain and run-off with a soil simulator. Each of five pans contained soil samples from working pastures or cornfields.



Soil boxes with clear fronts show the impact that deep rooting cover crops have on maintaining healthy, aerated soil. *Livermore Falls Advertiser photo by Nicole Carte*

After water simulating an inch of rain was sprayed over the pans, the hanging jars showed how soil health affects its ability to absorb water. The jars hanging in the front collected what would be run-off from rainfall and the the jars in the back collected water that was retained by the plants and aerated, well-rooted ground. The three soil boxes with poor or no soil cover quickly filled up with what would have been run-off. The two boxes with cover or mulch had little to no run-off, with most of the water penetrating the soil.

Workshop participants were supplied with soil compaction probes to test the pressure of the pastureland at Hardy Farm. Areas of ground traveled and grazed on by dairy cows tested at 250-300 pounds of pressure, which creates plates that roots have trouble penetrating. Conversely, ground tested underneath and outside the fence line showed an average between 100-150 pounds of pressure, which allows for healthier plant growth that in turn aerates the soil.

“Rotational grazing is the best way to reduce soil compaction and give grass time to recover, and roots time to work through the soil,” Benson said. “One way to judge the health of soil is to look for the presence of worm holes. Well managed grassland will have more organisms supporting more worms, which support more aerated soil.”

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This soil simulator uses topsoil from a healthy and an overgrazed pasture, as well as sections of cornfields with cover crop, mulch cover and no cover. *Livermore Falls Advertiser photo by Nicole Carter*



The soil simulator after an inch of water is sprayed over it, demonstrating how soil health impacts rainwater runoff. *Livermore Falls Advertiser photo by Nicole Carter*



Nat Bell and Sara Hodges test soil compaction at Hardy Farm, while a pasture resident looks on.
Livermore Falls Advertiser photo by Nicole Carter



Well-nourished soil (L) is loose and shows penetrating, intricate root structures. Impacted soil is tight and does not allow for plants to deeply root and aerate. *Livermore Falls Advertiser*
photo by Nicole Carter