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FFAR Awards the Connecticut Agricultural Experiment Station $449,607 to study soil amendments for carbon sequestration

New Haven, CT- The Foundation for Food and Agriculture Research (FFAR) has awarded the New Innovator in Food & Agriculture Research Award to Dr. Itamar Shabtai, a soil scientist at the Connecticut Agricultural Experiment Station (CAES). This three-year $449,607 grant will support the evaluation of the sequestration of organic carbon using calcium containing soil amendments. Collaborating on this project is Dr. Roland Wilhelm, a microbiologist at Purdue University.

Soil organic carbon greatly benefits soil health and boosts crop productivity, protects from erosion, and stores atmospheric carbon dioxide. “Soils store more carbon than plants and the atmosphere combined,” said Dr. Shabtai, “So, protecting existing soil carbon or increasing its levels could help lower atmospheric carbon dioxide concentrations.” However, efforts to increase organic carbon levels in soils are not always successful because we do not understand all the factors in play. In his recent work, Dr. Shabtai found that adding calcium to soils can make soil microbes decompose carbon more efficiently, a phenomenon not previously reported, ultimately locking up more carbon in the soil.

The new funding will allow Drs. Shabtai and Wilhelm to evaluate the effectiveness of two calcium-containing amendments - wollastonite and basalt rock dust - in accruing soil organic carbon. “These amendments are currently used for sequestering carbon in its inorganic form, but the effects of the calcium released from these amendments on carbon in organic forms are unknown” said Dr. Shabtai. They also plan to characterize the soil microbial community using gene sequencing to understand how it changes following the use of calcium amendment, thereby identifying microbes that are especially responsive to changes in soil health. “We hope that such bioindicators can be used in the future to enhance the current indicators used in soil health assessment,” said Dr. Wilhelm. If successful, these findings can move forward the agronomic use of calcium-containing amendments to help sequester soil organic carbon and improve soil health.

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