## Dairy Industry: Soil management and soil health

## Maysoon M Mikha

Soil health is defined as the soils capacity to meet an ecosystems function under various environments and land managements. The soil matrix is a dynamic and living ecosystem that promotes human sustainability and supports food production. Defining soil as a dynamic and living ecosystem indicates that soil is not a lifeless medium rather, it is filled with many organisms that work together in their environment. Improving our understanding of soil health helps in the assessment of land management activities that maintain land productivity and reduce degradation. Soil management can vary depending on soil type, environmental conditions, cultural practices, and human needs. Management practices can influence soil organic matter (SOM), soil structure stability, nutrient dynamics, productivity, and microbial diversity. One of the important components of soil health is SOM that can influence soil functionality and diversity through its impact on soil physical, chemical, and biological properties. High percentages of SOM is within the first few centimeters of the soils surface that can be negatively influenced by environmental conditions such as erosion (water and wind) and drought conditions. The SOM can also be impacted by anthropogenic activities including tillage practices, fallow frequency, and residue removal. Management with notillage, reducing tillage, maintaining crop residue, organic amendments, and reducing fallow frequency was found to replenish SOM, enhance soil microbial diversity, and improve sustainability. The Native Americans that first inhabited this land leave us with this wisdom. Treat the earth well: it was not given to you by your parents; it was loaned to you by your children.

Plants use sunlight to convert carbon dioxide and water into carbohydrates that serve as the building blocks for roots, stems, leaves, and seeds. They also interact with specific soil microbes by releasing carbohydrates (sugars) through their roots into the soil to feed the microbes in exchange for nutrients and water. A diversity of plant carbohydrates is required to support the diversity of soil microorganisms in the soil. In order to achieve a high level of diversity, different plants must be grown. The key to improving soil health is ensuring that food and energy chains and webs consist of several types of plants or animals, not just one or two.

Biodiversity is ultimately the key to the success of any agricultural system. Lack of biodiversity severely limits the potential of any cropping system and increases disease and pest problems. A diverse and fully functioning soil food web provides for nutrient, energy, and water cycling that allows a allowing the soil to reach its full potential. Increasing the diversity of a crop rotation and cover crops increases soil health and soil function, reduces input costs, and increases profitability.

Living plants maintain a rhizosphere, an area of concentrated microbial activity close to the root. The rhizosphere is the most active part of the soil ecosystem because it is where the most readily available food is, and where nutrient peak and water cycling occurs. Microbial food is exuded by plant roots to attract and feed microbes that provide nutrients (and other compounds) to the plant at the root-soil interface where the plants can take them up. Since living roots provide the easiest source of food for soil microbes, growing long-season crops or a cover crop following a short-season crop, feeds the foundation species of the soil food web as much as possible during the growing season.

Healthy soil is dependent upon how well the soil food web is fed. Providing plenty of easily accessible food to soil microbes helps them cycle nutrients that plants need to grow. Sugars from living plant roots, recently dead plant roots, crop residues, and soil organic matter all feed the many and varied members of the soil food web.

This work is partly presented International Conference on Food Production and Preservation October 17-18, 2018 Ottawa, Canada

Received: Feb 23, 2021; Accepted: March 12, 2021; Published: March 23, 2021

Citation: Mikha MM (2021) Dairy Industry: Soil management and soil health, J Adv Dairy Res. 9: 251.

**Copyright:** © 2021 Mikha MM. This is an open access article distributed under the term of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Correspondence to:** Maysoon M Mikha, Department of Agriculture-Agricultural Research Service (USDA-ARS), USA E-mail: maysoon.mikha@ars.usda.gov