



**FROM THE DESK OF RATTAN LAL**  
**Viewpoint 2.2018**

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**Soil: The Hidden Treasure of Nature**

Fellow Soil Scientists,

Numerous attributes of soil vital to essential ecosystem services are hidden beneath the surface, and are neither obvious to a casual observer nor easily comprehended. It is a classic example of “out of sight, out of mind”. Several environmental problems of the 21<sup>st</sup> century have arisen because humans neglect, misuse, take those precious resources for granted, and treat them as the global commons. Examples of ignored resources include soil organic carbon (SOC), the soil water storage (SWS) capacity, and soil microorganisms. Estimated to 1-m depth, the global SOC stock of 1505 Pg (billion metric ton) is 2.4 times that of the vegetation (630 Pg) and 1.9 times that of the atmosphere (800 Pg). While the biomass of trees is visible and appreciated, the hidden SOC stock is largely unknown and ignored. Most cropland soils of the Midwestern region of the U.S. contain ~100 Mg of SOC per hectare. Each Mg of diesel or oil being equivalent to ~1 Mg C, SOC stock in one hectare is equivalent to 100 Mg of diesel or oil. Similarly, it is the SWS capacity (the so-called greenwater) on which depends the Earth’s net primary productivity. An ideal soil (50% porosity containing an equal amount of water and air) contains 2500 m<sup>3</sup> of water to 1-m depth, which is enough to meet the water needs of 25,000 people at 100 L/day. One tablespoon of a fertile soil contains billion of organisms including bacteria, protozoa, nematodes and fungi. These organisms are essential to recycling of biomass and are source of antibiotics and other services. The fact that even a well-meaning administrator/policymaker does not consider these and other attributes of soil in conceptualizing a development plan or a program is indicative of the lack of communication between soil scientists and the decision-makers. Addressing the “out of sight, out of mind” syndrome necessitate a strong and continued communication between soil scientists on the one hand, and research managers, policymakers, the general public, and land planners on the other. Indeed, soil science community has an exciting but a challenging task as researchers, teachers, and communicators for enhancing the awareness about the importance of soil to human wellbeing and nature conservancy. As Dalai Lama said **“The roots of all goodness lie in the soil of appreciation for goodness.”**

Sincerely,

Rattan Lal,  
President, International Union of Soil Sciences

