1) Read the text, focus on cause and effect relationship. Learn the underlined vocabulary to be able to explain it to your partners and use it in your presentation.

Organic matter is a key component of soil that affects its physical, chemical, and biological properties, contributing greatly to its proper functioning on which human societies depend. Benefits of soil organic matter (SOM) include improvement of soil quality through increased retention of water and nutrients, resulting in greater productivity of plants in natural environments and agricultural settings. SOM improves soil structure and reduces erosion, leading to improved water quality in groundwater and surface waters, and ultimately to increased food security and decreased negative impacts to ecosystems. Since the beginnings of recorded history, societies have understood that human activities can deplete soil productivity and the ability to produce food. Only in recent history has the understanding of soil productivity been tied to SOM levels, with the depletion of SOM stocks often leading to large-scale impacts on whole ecosystems as well as the entire planet. For example, destruction of rainforests that hold a significant amount of the carbon stored in terrestrial ecosystems contributes significantly to rising atmospheric carbon dioxide (CO_2) levels linked to climate change, while reductions in SOM levels from soil disturbance from mining can impact infiltration of rainfall and the storage of soil moisture important for flood mitigation. Soil disturbance also leads to increased erosion and nutrient leaching from soils, which have led to eutrophication and resultant algal blooms within inland aquatic and coastal ecosystems, ultimately resulting in dead zones in the ocean. Restoration of organic matter levels in soil requires an understanding of the ecological processes important for SOM storage. Proper restoration techniques can help restore terrestrial ecosystem functions.

Adapted from: https://www.nature.com/scitable/knowledge/library/soil-carbon-storage-84223790

2) Read the text, focus on cause and effect relationship. Learn the underlined vocabulary to be able to explain it to your partners and use it in your presentation.

Soil organic matter is composed of soil microbes including bacteria and fungi, decaying material from once-living organisms such as plant and animal tissues, fecal material, and products formed from their decomposition. SOM is a heterogeneous mixture of materials that range in stage of decomposition from fresh plant residues to highly decomposed material known as humus. SOM is made of organic compounds that are highly enriched in carbon. Soil organic carbon (SOC) levels are directly related to the amount of organic matter contained in soil and SOC is often how organic matter is measured in soils.

SOC levels result from the interactions of several ecosystem processes, of which photosynthesis, respiration, and decomposition are key. Photosynthesis is the fixation of atmospheric CO_2 into plant biomass. SOC input rates are primarily determined by the root biomass of a plant, but also include litter deposited from plant shoots. Soil C results both directly from growth and death of plant roots, as well as indirectly from the transfer of carbon-enriched compounds from roots to soil microbes.

Decomposition of biomass by soil microbes results in carbon loss as CO_2 from the soil due to microbial respiration, while a small proportion of the original carbon is retained in the soil through the formation of humus, a product that often gives carbon-rich soils their characteristic dark color.

Other ecosystem processes that can lead to carbon loss include soil erosion and leaching of dissolved carbon into groundwater. When carbon inputs and outputs are in balance with one another, there is no net change in SOC levels. When carbon inputs from photosynthesis exceed C losses, SOC levels increase over time.

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