# Biosolids build soil health and mitigate climate change

Just as human beings need food to produce energy, soil microbes need organic matter. As soil microbes break down organic matter, feeding themselves and plants, soil carbon can be released as $CO_2$, taken up into microbial biomass, or become trapped in the soil.

HOLDS CARBON IN SOIL FOR *50-100 YEARS*

RETAINS CROP RESIDUE CARBON

Farmers drive soil carbon sequestration through the addition of organic soil amendments such as biosolids. Increased soil organic matter has the co-benefits of greater aeration, water infiltration, erosion resistance, enhanced microbial diversity and activity, and more (Tian et al. 2023). Building soil organic matter equals building soil health.

## SOIL CARBON SEQUESTRATION

Soils are natural carbon sponges, trapping carbon in the form of organic matter. In fact, **soils hold more carbon than all terrestrial life and the atmosphere combined** (Scharlemann et al., 2014). Biosolids has proven to be very effective in building and maintaining soil carbon. Adding biosolids to soil prevents carbon from turning into $CO_2$, preserving it for decades.

Biosolids are a rich source of organic matter compared to conventional, mineral fertilizers. Applying biosolids at 5-10% the weight of the top 6 inches of soil could achieve a 50% increase in soil carbon for up to five decades later. This far exceeds the international “4 per 1000” initiative of the 2015 Paris Climate Summit, an initiative aiming to increase soil carbon by 0.4% each year. Therefore, biosolids are a key component of our climate-change future. Our management decisions determine whether we waste this valuable resource as $CO_2$ in the atmosphere or build soil organic matter and drive carbon sequestration through biosolids land application.


Tian, G., Chiu, C.-Y., Oladeji, O., Johnston, T., Morgan, B., Cox, A., Granato, T., Zhang, H., & Podczerwinski, E. (2023). JumpStart of soil organic matter with highly stabilized organic amendment: Implication for climate-smart agriculture. Environmental Challenges 12: 100726

Scharlemann, J. P. W., Tanner, E. V. J., Hiederer, R. & Kapos, V. 2014. Global soil carbon: understanding and managing the largest terrestrial carbon pool. Carbon Manag. 5, 81–91c