

Study reveals effects of cropland reclamation on soil organic carbon in China's black soil region

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Long-term use of cropland and cropland reclamation cause decreasing trend in soil organic carbon (SOC) stock. However, studies on effects of

crop reclamation on SOC changes are rare.

A research team led by Prof. Song Kaishan from the Northeast Institute of Geography and Agroecology (IGA) of the Chinese Academy of Sciences has completed SOC mapping of Northeast China from 1985 to 2020 and extracted different reclamation periods based on Landsat images and land cover data. The study was published in *Global Change Biology* on June 25.

The researchers found that high SOC is generally distributed in black soils and eastern Heilongjiang Province, and low SOC is mainly distributed in [mountainous areas](#). The highest SOC content is more than 40 g kg^{-1} , and the lowest SOC content is less than 5 g kg^{-1} in Northeast China. Nearly 64% of cropland had a decreasing trend for SOC content, and the largest SOC loss was more than 15 g kg^{-1} in some regions.

Environmental factors (precipitation and temperature) mainly affected the spatial changes of SOC, and the effect of temporal changes was small. On the contrary, [social factors](#) (irrigation area, agricultural machinery, fertilizer consumption and [rural people](#)) dominated the temporal changes of SOC.

Cropland reclamation had the largest effect on wetlands, and reclamation period of years 31–35 from wetlands led to $16.05 \text{ Mg C ha}^{-1}$ SOC density loss.

The study provides a reference for SOC change in the black soil region of Northeast China and can attract more attention to the area of the protection of "black soils" and natural ecosystems.

More information: Xiang Wang et al, Effects of cropland reclamation on soil organic carbon in China's black soil region over the past 35 years, *Global Change Biology* (2023). [DOI: 10.1111/gcb.16833](https://doi.org/10.1111/gcb.16833)

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