Soils Lose Carbon Too

A recent research has uncovered important carbon losses from soils across England and Wales mainly due to global warming and land use. These findings suggest that carbon loss from soils might occur much more broadly with important consequences on global carbon balance.

The concern about the harmful consequences of human-induced increase in atmospheric carbon dioxide has placed the natural carbon sinks at the centre of both scientific and political attention. Holding more than twice as much carbon as in vegetation or the atmosphere, soils are the key players in global carbon cycle and are commonly viewed as major, large scale sinks for carbon. Any changes in soil carbon content could have important consequences on global carbon balance.

Traditionally, soils are considered to be the “safest” and ultimate sink for carbon due to the general assumption that the carbon contained in soil is inert and immobile. But a recent study has shown the contrary: important quantities of carbon have been lost from soils in England and Wales during the last 25 years. These conclusions are based on the investigation of the changes in soil organic carbon within the top 15 cm of soils across England and Wales between 1978 and 2003. This study included about 6000 sites covering all types of soils and land uses. The National Soil Inventory was used as the main source of data on soil distribution and chemistry.

The major findings of the research are:

- During the survey period, carbon was lost from soils across England and Wales at a mean rate of 0.6% per year.
- Extrapolating the results to the entire United Kingdom, this represents an annual carbon loss of about 13 million tonnes which is equivalent to 8% of the annual carbon dioxide emissions of the UK.
- Soil carbon losses occurred regardless of soil properties.
- Losses were proportional to the carbon content of soil being sampled.
- Losses occurred regardless of type of land-use.
- Soil is not a large-scale and ultimate sink for carbon.
- Losses of carbon are probably due to changes in climate and land management practices.

The political implications of these findings are considerable. In particular, they highlight that the development of an effective climate policy will require a more comprehensive approach that includes all major carbon sources and sinks in the biosphere with emphasis on protecting existing pools of stored carbon.

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