

Carbon sequestration under no-tillage agriculture limited by climate conditions

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Years ago, no-tillage agriculture was believed to sequester atmospheric carbon oxide (CO₂) in soil for mitigating global warming. Recent years, evidence is mounting that potential of sequestering C in no-till farming are highly overstated, and scientists caution that the role of no-till practice in climate change mitigation is challenging. But the heterogeneous effect of no-till to soil carbon accumulation of croplands over the world was not clarified. We propose that gain or loss of soil carbon under no-till subjected to climate conditions. Minor gain of soil carbon was occurred in regions with T/P ratio (annual air temperature, °C/ precipitation, m) large than 12, while regions with T/P ratio less than 12 had potential risk of carbon loss. We recommend that for regions with high temperature or low precipitation, no-tillage agricultural should contribute to carbon sequestration and benefit soil erosion. While, we take the precaution of regions with low temperature as well as heavy precipitation should pay close attention to management practices of farmers.

Keywords: Soil carbon, No-tillage, Temperature/precipitation ratio