

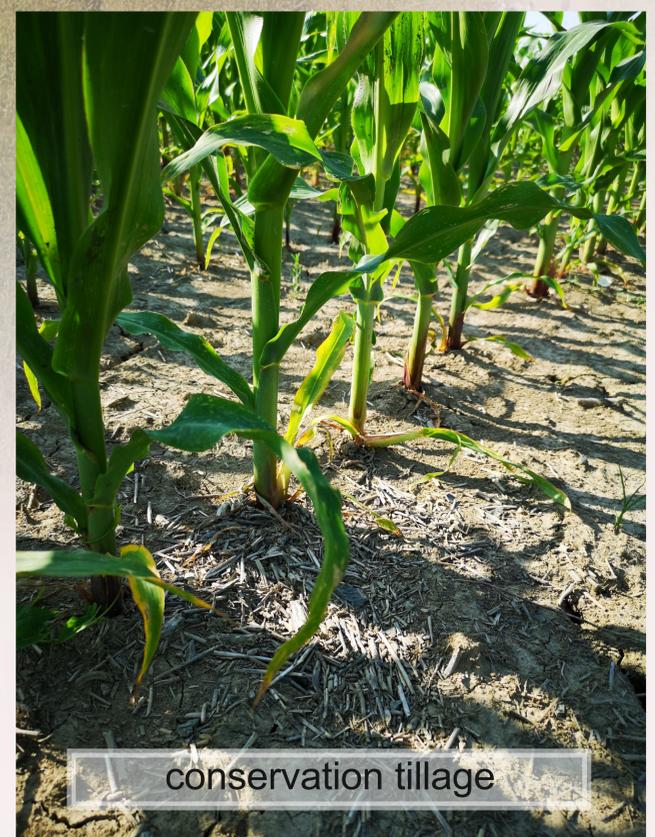
How soil tillage effects the soil organic matter status in soil?

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Soil organic matter (SOM) content is the key function for preventing soil degradation and rising of soil fertility. Furthermore, SOM plays a crucial role in soil carbon sequestration, as a consequence of soil containing the largest terrestrial carbon (C) pool mainly in the form of soil organic matter, which is very sensitive to climate changes, land use and agricultural management practices.

The main problem occurs when we change management practice of native land which, due to soil disturbance, causes rapid loss of organic matter. It is estimated that in the period of 50 years 30-50 % of the soil organic matter found under native forest can be lost after the forest was converted to agriculture. The main reason of that rapid loss is excessive tillage (conventional tillage - plowing) and also, inadequate crop rotation or absence of soil cover. Conventional tillage increases the oxygen content of the soil, stimulates soil microbes to decompose soil organic matter which leads to soil structure deterioration, disturbed soil-water relationships and finally the lower soil fertility. When organic material is not applied to the soil through organic fertilizers, crop residues or cover crops (siderate), soil organic-matter levels rapidly decline.



In recent years, the promotion of less intensive tillage practices (conservation tillage or reduced tillage) as agricultural management has manage to mitigate some of mentioned negative impacts on SOM. The transition from conventional to conservation tillage can result in C stock increase especially in upper soil layers (0–30 cm) around 4.6 t/ha over ≥ 10 years. Higher SOM concentrations in the upper soil will not only increase soil fertility but also provide resilience to extreme weather conditions which are a consequence of climate change.