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Compost incorporation, soil aggregates and organic C sequestration in two different Tuscan soils.

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Soil amendment with compost obtained from pre-selected urban food scraps together with green manure, reduced tillage, rotation of crops and other practices are generally considered as improving soil structure by increasing the levels of nutrient elements.
The addition of well composted organic residues may increase the amount of organic C entangled within mineral particles and also stabilize soil aggregates and micro-aggregates. This consequently reduces carbon dioxide emissions and mitigates temperature increases.
Our data refer to two soils, a clay soil and a sandy soil, subjected to a long term compost incorporation in order to ameliorate soil fertility.
We measured the dynamic of pore size distribution and total porosity evolution together with water soil aggregates stability.
We also developed our own procedure to assess the stabilization and protection of organic C in soil aggregates, by analyzing the dynamics of OM dry-oxidation by LTA (Low Temperature Ashing) cold oxygen plasma.
Our results confirmed the beneficial effect of the compost on soil structure of both soils and that the potential sequestration of soil organic C is related to the granulometry and mineralogical features of the two soils.
We propose an original methodological approach to assess the effective C sequestration in agricultural soil.