

**LIFE CarbOnFarm project: technologies to stabilize soil organic carbon and farm productivity, promote waste value and climate change mitigation (LIFE12 ENV/ IT 000719)**

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The LIFE CarbOnFarm project focus on the application of sustainable soil managements in agro-ecosystem based on the application of high quality composts. The goal is the restoration of SOM level and functions in agricultural soils, attained through the valorisation of local recycled agricultural biomasses. The project strategies are applied at farm scale in five project sites, located in Piemonte and in Campania regions in Italy, reproducing the local farming systems. Different compost are applied, depending on the local availability of organic waste and biomasses. In farm sites of Piemonte, the compost is produced from the solid fraction of anaerobic digestion of cattle slurry (solid digestate), while in Campania the compost is obtained by the farm biomasses and residues with *on-farm* composting facilities. The main objectives are the improvement in quantity and quality of soil organic carbon, the restoration of biological properties, the maintenance of crop productivity, the decrease of energetic inputs, the control of soil green house gases emissions.

After two year of project activities sounds indications were obtained on the effective contribution of humified composts to soil fertility and crop yields.

The analyses of compost from agricultural biomasses revealed a large content of humified hydrophobic molecules, associated with a suppressive propertie and biostimulation activity. The amended plots of each experimental site showed a significant increase of SOC with an incorporation of exogenous OM in bulk soils and soil aggregates and limited effect on GHG emissions. The addition of OM inputs promoted an overall improvement of soil biological activities, thereby producing also positive effects on crop productivity