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**EFFECT OF EXOGENOUS ORGANIC MATTER AND
FERTILIZER APPLICATION ON THE DISTRIBUTION OF
ORGANIC CARBON IN SOIL FRACTIONS**

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Soil organic carbon (SOC) pools were studied in sandy loam soil using physical fractionation in a short term (one year old) arable field experiment in Belgium (experimental site of Gent University, Melle) which was started in spring 2005. Replicate experimental plots of six different manure and fertilizer treatments and two unfertilized control plots were sampled in March 2006. Samples from all plots were separated into five size and density fractions according to the physical fractionation procedure for the isolation of coarse free particulate organic matter (coarse fPOM), fine free POM (fine fPOM), intra-microaggregate POM (iPOM) and silt and clay sized OM, with indication of the four isolated conceptual soil organic matter pools according to the model of Six et al. (2002). Fertilization had a distinct influence on OC amount present in different fractions. The total organic carbon content was significantly increased ($P < 0.05$) by only two applications of organic fertilizers: between 1.10 and 1.51% OC for the amended plots versus 0.98-1.08% for the unamended plots. The amount of OC in the free particulate organic matter (fPOM) fraction was also significantly increased ($P < 0.05$), but there was no significant difference in the OC content in POM occluded in micro-aggregates and in the silt + clay-sized organic matter fractions could be observed after one year. Difference in the amount of OC present in different fractions consequently resulted in shifts of the relative proportion of the OC present in these conceptual OC pools. The results showed that even in less than one year period of applying organic matter pronounced effects on the distribution of OC in the SOM fractions occurred.

Key words: Organic Carbon (OC), Organic Matter (OM), physical fractionation, manure, fertilizer.

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