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Urban soils: properties for utilitzation for green infrastructure and urban agriculture

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The human influenced soils in urban areas are of prime importance to human populations. Also, it is becoming a trend that there is large increase in reclaimed lands and new users for old industrial areas. Very often the urban soils are heavily modified by different anthropogenic factors. Therefore, it makes it essential to collect the data and knowledge of urban soils in order to understand better how such soils can be managed, rehabilitated or reconditioned to support green infrastructure or urban agriculture. Although the soil organic carbon (SOC) is the largest carbon stock in terrestrial ecosystems and the carbon sequestration is a widely accepted soil function there is still few studies mapping the carbon stocks in urban areas using digital soil mapping techniques. For urban land-use planning and decision making in a process of green infrastructure sustainable development it is in major importance. The urban soils are often lacking sufficient amount of organic matter but they are degraded (compacted, builded, contaminated by construction debris, graded) making them unsuitable as a growing medium. Therefore, the use of certain green infrastructure practices and the development of urban agriculture can be challenging in an urban environment. The issue of assessing soil quality becomes two-fold: the health of the soil as a growing medium needs to be addressed as well as the possible contamination that may be present. Knowing the development history of a parcel is key to determining what type of soil testing should be done, if any, prior to redevelopment or reuse. For current, pilot scale study the soil sampling was carried out in Tartu, Estonia. The different microenvironments were determined inside of urban areas. Soils were collected from such a microenvironments as urban garden areas, parks, other green infrastructure elements. The soils were analyzed for main agrochemical and physical properties at the Estonian University of Life Sciences, laboratory of the Soil Science and Agrochemistry. The undisturbed soil samples were taken with steel cylinders 88.2 cm^3 (diameter 5.3 cm, height 4 cm) for bulk density (BD) measurements. The samples were dried in an oven at 105°C for 24 h to determine the BD. The soils morphological descriptions will be included. Our preliminary findings show that organic matter in urban soils can be remarkably variable. Also, the other physical and chemical determined parameters. In current presentation we will present results from pilot scale and meta-analysis study results.