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The university campus as an opportunity to build awareness on urban soils

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The central campus (CC) of the National Autonomous University of México (UNAM) in the megalopolis of Mexico City offers unique features to build awareness and engagement among the community (students, academics, workers, authorities and society) about urban soil functions, soil ecosystem services and its relation with sustainability. The campus (730 ha) houses the "Pedregal de Sán Ángel" Ecological Reserve (32.6% of the campus) to protect a unique ecosystem developed on the lavas of the Xitle Volcano that erupted 1670 years ago and has young, poorly developed soils, which support the highest biodiversity in the Valley of Mexico) with good infiltration capacity. There are also Technosols originated during the construction phases of the CC (1950s, 60s, 70s, 80s and 90s) and support green areas for recreation (23%). At the other extreme there are the sealed soils (44.3%) in which all soil functions have been annulated.

With this study we want to present strategies we have been implementing to use the CC as a living classroom in which students describe the soils, identify functions and, if necessary, propose management practices to improve their quality. On the other hand, research can be done on pedogenetic processes (accumulation of organic matter and mineralogical transformation of materials) in Technosols.

In addition, there are three sites where specific functions can be visualized: a) a soil buried by the lava flow (paleosol) that allows us to approach aspects of the geological and cultural history of the Valley of Mexico, b) the "geopedregal", a rocky outcrop of the lava flow surrounded by constructions, which has been restored to conditions similar to those of the natural ecosystem. The necessary work for the restoration has been done with students, who compared ecosystem services of these area with those offered by green garden areas and sealed soils, and c) "Cantera oriente" a quarry of past mining activities for basalt extraction, which left a 30 meters deep quarry in which rehabilitation works were done in the last 35 years. The result of the soil's function as a regulator of the hydrological cycle can be excellently demonstrated at this site, because springs formed at the quarry bottom as the shallow aquifer was drilled, which in turn formed a pond system.

These experiences have made it possible, among other things, to incorporate soil as an important topic into guiding documents such as the UNAM Sustainability Plan.