USDA United States Department of Agriculture

Urban Soils

More urban farms are growing local, healthy produce for their communities.

Stormwater management is a major concern in our cities, particularly with combined sewer systems.

Urban parks and forests provide much needed climate-regulating green space.

What are urban soils?

The term ***urban soil*** refers to soils in areas of high population density in the largely built environment. These soils can be significantly changed human-transported materials, human-altered materials, or minimally altered or intact “native” soils. Soils in urban areas exhibit a wide variety of conditions and properties and may have impervious surfaces, such as buildings and pavement.

Some factors that influence the characteristics and behavior of soils in urban areas include:

- Land use history and disturbance
- Geography and geology
- Extent of impervious surfaces
- Nature of human-transported or “fill” materials

Although there are similarities in urban soils globally, the urban soil pattern is unique for every city.

Why are urban soils important?

According to the 2010 U.S. Census, 81 percent of the nation’s population lives in urban areas. Natural resources in the urban setting are used intensively and, if managed properly, can provide valuable ecosystem services. The need for better understanding of urban soils is more important than ever and highlights the need for accurate and proper documentation, soil mapping, and interpretation of soil changes in the urban environment.

Detailed and up-to-date information about urban soils provides city planners with fundamental data to make important decisions about land use—how to protect, conserve, and manage natural resources, with positive impacts on public health and safety and quality of life.

What is USDA-NRCS’ role in mapping urban soils?

The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) is the lead Federal agency for mapping and interpreting our nation’s soils, including urban areas. NRCS actively produces and maintains soil maps, reliable information on soil properties, ratings, and interpretations. NRCS soil survey information is available online at no cost.

NRCS leads the National Cooperative Soil Survey, a nationwide partnership of Federal, regional, State, and local agencies and private entities. This partnership works to cooperatively investigate, inventory, document, classify, interpret, and disseminate information about soils.

How are urban soils mapped?

The distribution of soil types and important soil properties in urban areas are more variable than observed in undeveloped and native landscapes. There is often no visual surface evidence of human disturbance. Old soil and geological maps, aerial photographs, soil boring logs, and onsite soil descriptions are invaluable in understanding pre-development conditions and the degree and nature of alteration.

Developing accurate and useful information about urban soils requires a significant amount of data collection and analysis which is targeted to meet the needs of local managers. In addition to standard soil sampling and laboratory analyses, NRCS soil scientists apply the latest field technologies, such as ground-penetrating radar, portable x-ray fluorescence, and electromagnetic induction, to collect and generate soils data without disrupting the properties and functions of these soils.

What is USDA-NRCS' role in providing technical soil services in urban areas?

USDA-NRCS staff have experience characterizing soils in urban areas using traditional soil description and measurement techniques as well as innovative methods, such as ground penetrating radar. USDA-NRCS provides these services on a limited basis to groups seeking to safely use the urban soil resource for community garden development, for habitat restoration projects in parks and forest preserves, and for water quality improvement through stormwater management, among other land uses. Soil survey identifies important soil types and general soil distribution patterns, but it is not a replacement for onsite soils investigations.

How will the urban soils data be used?

A variety of professions require urban soils data:

- Urban farmers
- Engineers, architects
- Urban and land use planners
- Park, forest, and habitat managers
- Stormwater and water quality managers

Urban soil survey is already guiding the management of major urban centers and suburban areas where most of us live, directing the best use of open space and the optimal delivery of soil ecosystem services. Soils data can also be used to help confront emerging issues such as climate change, coastal resiliency, estuary restoration, small and large-scale watershed use planning, and environmental literacy.

Where can I find urban soils data?

Web Soil Survey—Web Soil Survey is NRCS' official online portal of soil survey data. It provides soil properties and characteristics along with spatial data and a variety of soil interpretations, recommendations for use and conservation, and limitations.

Detailed soil survey data is available for urban areas, including the cities of Baltimore, Chicago, Cincinnati, Detroit, Los Angeles, New York, San Diego, San Jose, St. Louis, Washington, D.C, and surrounding suburban areas.

To learn more about soil or to access soils data, visit www.soils.usda.gov.

For NRCS Assistance:

Contact your local USDA Service Center, which you can find at

https://offices.sc.egov.usda.gov/locator/app

Urban soils data can help...

Community Organizations

Urban Farmers

Land Use Planners

Soil and Plant Science Division

Natural Resources Conservation Service

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