



Soil color – a window for public and educators to understand soils

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Soil color is one of the most visually striking properties recorded by soil scientists around the world. Soil color is an important characteristic related to soil properties such as organic matter, parent materials, drainage. It is a simplified way for the public and educators alike to understand soils and their functions. Soil color is a quick measurement that can be recorded by people using color charts or digital cameras, offering an opportunity for the citizen science projects to contribute to soil science. The US Soil Survey has recorded soil colors using Munsell color system for over 20,000 soil types representing a wide range of conditions throughout the United States. The objective of this research was to generate a US soil color map based on color descriptions from the Official Series Descriptions (OSDs). A color calculator developed in R and ArcMap were used to spatially display the soil colors. Soil colors showed vertical trends related to soil depth and horizontal trends related to parent material and climate. Soil colors represent development processes depending upon environment and time that have influenced their appearance and geographic distribution. Dark colors represent soils that are rich in organic matter, such as the soils of the Midwest USA, which are some of the most fertile soils in the world. These soils are relatively “young” in that they developed over the last 20,000 years in materials left behind after continental Glaciers retreated and reflect long-term prairie vegetation that dominated this area prior to European settlements. Dark soils of the Pacific Northwest reflect the influence of forests (and volcanic activity) but are shallower and less fertile than the deep dark Midwest soils. Soils of the eastern and southern Coastal Plains are older and are enriched with iron oxides (‘rust’) which gives them their red coloring. Soils of flood plains, like the broad Mississippi Valley, have multi-colored soils that reflect the process of flooding, scouring, depositions and standing water areas, providing a mosaic of process-driven colors. In the drier areas of the High Plains and Desert Southwest, soils are lighter in color and reflect the presence of sands like Nebraska Sand Hills or enrichment with light-colored carbonates and salts. The mountainous regions such as Appalachians, Ozarks etc., were predominantly red to brown due to higher clay content and older soils.