The Use of Soil Forming Factors in the Development of Soil Taxonomy

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The past and present roles of the five soil-forming factors in creating categories in USDA Soil Taxonomy have been analyzed. The factorial and genetic approach is clearly present in Soil Taxonomy, but was not so evident in the 7th Approximation of 1960. Soil climate is the most important factor in Soil Taxonomy. Climate is used at the highest level to define two of the 12 soil orders: Aridisols, the soils of the dry regions, and Gelisols, the permafrost-affected soils and is also used to differentiate suborders in eight of the remaining orders. Parent material is used to fully define two orders: Histosols and Andisols, and partially to define the suborders in the Entisol order (Fluvents, Psamments). Only one group of organisms, the worms (Verm-), is used at the great-group and subgroup levels in several orders. Relief and time are not used in defining taxa in Soil Taxonomy. Three of the eight epipedons are defined on the basis of parent material (folistic, histic, melanic), two on the basis of human activities (anthropic and plaggen), and two from the interaction of climate and vegetation (mollic and umbric). Of the 19 subsurface horizons, 11 originate from the interaction of climate and parent material. This analysis reveals there is an imbalance in the utilization of the soil-forming factors in Soil Taxonomy, with an emphasis on climate and parent material.