A New Look at Soil Survey: A Tandem Approach Using Conceptual and Quantitative Methods

G. P. Demas and J. H. Brown

For the past 50 yr, since the development of the five state factors of soil formation by Jenny (1941), there have been few other concepts or research that have had a greater effect on soil survey than the advancements made in technology and statistical analysis. New technology and the increasing use of statistics shifts the emphasis of soil survey from the conceptual and tacit methodologies of soil mapping, and towards increased utilization of computer generated maps and statistical analysis of field data to make mapping decisions. Albeit a quiet revolution, it has been a revolution just the same.

In the early part of this century, soil mappers relied heavily on geologic concepts and field morphology to delineate areas of similar soils. A portion of the text of the Soil Survey of Worcester County, Maryland (USDA-Bureau of Chemistry and Soils, 1928), illustrates this very well. From the “Soils” section:

The soils of Worcester County may be classified as well-drained and poorly drained soils. By far, the greater part of the county comprises well-drained soils. This is a region in which the soils with well-developed profiles have the characteristics of the brown soil group…

In the poorly drained areas the surface soils range in color from almost white to black.

All the soils from Worcester County have developed from beds of sand, silt, clay, and gravel. These geologic materials are of such recent age that they are still unconsolidated and immature.

In other portions of the text it is noted that the major difference between soil series was their color and texture. Examples include “red clay land” and “white sugar sand.” This approach to soil series may have been related to the taxonomic system in place at the time, where colors and drainage class were key components in the correlation of soil series.

1 Soil Scientist, USDA-NRCS, 304 Commerce St., Snow Hill, MD 21863; and State Soil Scientist, USDA-NRCS, 339 Busch’s Frontage Rd., Suite 301, Annapolis, MD 21401.