

University of Missouri Extension

G9000, Reviewed October 1993

Missouri Soil Surveys

Nyle C. Wollenhaupt and R. David Hammer
Department of Agronomy

Bruce W. Thompson
Natural Resources Conservation Service

Many things — such as erosion control, identification of prime farm lands, establishment of sound agricultural practices, planning for urban growth — are based on the properties, location and distribution of soils. Texture, slope length, slope steepness, drainage, acidity, stoniness and depth are important characteristics in soil management.

Soil resources of Missouri are classified, mapped and interpreted through county soil surveys. The published soil survey reports contain maps of the location and extent of important soils in each county. Each identified soil is described by its chemical and physical properties, is classified with a national classification system, and is interpreted for agricultural, engineering, recreational and urban uses.

How surveys are made

The soil scientist closely examines aerial photographs used as base maps. The scientist looks for relationships among soil surface colors, native vegetation and topography, because soils develop characteristic features in response to climate, parent materials, topography, vegetation and time. The soil scientist can often predict the location of certain soils on the aerial photos.

Then the soil scientist walks the landscape to examine soils and gather data. Soil boundaries are delineated on the aerial photos based on the field observations. The amount of detail recorded on the aerial photos depends upon the mapping scale used during the survey.

The published soil survey maps include soil boundaries, streams, roads, township sections and cultural features. Symbols on the map identify soil phases, including information on surface texture, slope and estimated erosion. Map scales are 1:15,840, 1:20,000, or 1:24,000, which equal 4, 3.2 or 2.6 inches of map per mile of land.

Uses of soil information

The published survey also contains information about each soil, including interpretations helpful for selecting best use and management practices.

Agriculture and forestry

Farmers can evaluate which crops are best suited for their soils. Interpretations help predict soil irrigation potential, drainage needs, farm pond suitability and necessary erosion control practices.

Woodland owners can find species best suited for specific soils, estimated productivity ratings and soil management considerations.

Some counties use soil surveys to determine agricultural use value grades required under the statewide reassessment program.

Real estate

Home builders can use the soil survey to aid in evaluation of lots and homesites for concerns such as flooding, seepage, foundation stability, erosion and septic system suitability.

Builders and developers can design subdivisions to accommodate soil patterns and conditions on the landscape. Careful planning and construction can help builders avoid or overcome potential soil problems. The survey also can be useful in locating areas with soil properties most suitable for industrial development.

Waste disposal

Soils and geological information are essential when evaluating potential sanitary landfill and sewage lagoon sites. A soil survey can indicate potential suitability for septic or lagoon systems. Waste disposal systems should be designed to meet site-specific conditions.

Highways and utilities

Soils information is essential when designing and constructing roads, pipelines and utility lines. The soil survey can identify areas prone to flooding, wetness, slope instability, erodibility, corrosion potential, depth to bedrock, shrink-swell potential and load-bearing capacity.

Land use

Soil surveys can be useful aids for government officials, land use planners and others involved in decisions regarding building permits, planning utility extension, preserving prime agricultural land or reclaiming mined lands.

Recreation

The soil survey can provide information necessary when evaluating areas for wildlife habitat, parks, campgrounds, ball fields, golf courses and other activities.

Status of the survey program

Field work is complete for about 74 percent of Missouri. As of April 1987, soil survey reports of 46 counties were available for public distribution. Soil surveys are in progress in 38 counties. Missouri should be mapped "once over" by about 1995.

About 50 soil scientists are involved in the statewide survey. Mapping an average county requires about 10 worker-years of field work, takes three to five years and costs about \$1.60 per acre.

Soil surveys must satisfy the needs of a variety of users and require extensive labor and research commitments. The Missouri soil survey effort is a cooperative program involving the Missouri Soil and Water Conservation Districts and the Department of Natural Resources, the MU Agricultural Experiment Station, MU Extension and the U.S. Department of Agriculture Natural Resources Conservation Service and Forest Service.

An amendment to Missouri's Constitution in 1984 provided supplemental funding for the soil survey, allowing hiring and training of additional soil scientists. The Natural Resources Conservation Service has provided support in response to citizen commitment.

County soil and water conservation districts may apply for state assistance to accelerate the progress of the soil surveys. Members of the cooperative program set priorities on the basis of local interest, contributions and needs.

How to obtain soils information

Missouri residents may obtain free copies of county soil survey reports from soil and water conservation districts and Natural Resources Conservation Service offices. Non-residents are charged \$4 per copy. Preliminary soil survey field sheets are available for public use in some counties. The district conservationist in the county soil conservation office can provide information.

Many Missouri counties had reconnaissance soil surveys prior to 1940, and some of these maps are available for general planning or historical reference. Public libraries, historical societies and the Missouri State Historical Society in Columbia may have reference copies available.

Order publications online at <http://extension.missouri.edu/explore/shop/> or call toll-free 800-292-0969.



■ Issued in furtherance of the Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211
■ an equal opportunity/ADA institution ■ 573-882-7216 ■ extension.missouri.edu