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Missouri Soil Surveys

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Erosion control, identification of prime farmland, energy conservation and urban growth all require detailed knowledge of the location and properties of soils.

Soil resources of all Missouri counties are being classified, mapped and interpreted in response to this need for information on soil characteristics such as texture, slope, drainage, acidity, stoniness and fertility.

This information is published in soil survey reports which contain detailed maps of the location and extent of all the soils in the area. Each soil identified is described by its physical and chemical properties, classified according to a national system and interpreted for agricultural and urban uses.

How Surveys Are Made

First, the soil scientist predicts the location of various soils, using the five factors which influence the development and position of soils on the landscape: climate, parent material, topography, vegetation and time.

Then, the soil scientist walks over nearly every acre and examines 40-60 sites per section to confirm predictions and to gather samples for physical and chemical analysis.

In the field, soil scientists use aerial photographs as base maps when drawing soil boundaries. The final published soil survey maps include not only soil boundaries but also streams, roads and township sections. Soil information on the map includes surface texture, slope and degree of erosion. The map does not show soil areas too small to be drawn on the map.

Soil survey maps are published at a scale of 1:20,000 or 1:24,000, that is 3.2 to 2.6 inches of map per mile of land. See Figure 1.



Soil Scientist Les Tobin uses a hand probe to examine each soil type to a depth of 5 feet.

Uses of Soil Information

Besides soil maps, the survey contains detailed information about each soil type. Interpretations are helpful in telling how to select the best use and manage soils for many purposes.

Agriculture and forestry. Farmers can determine which soils are best suited for a particular crop.

Interpretations describe a soil's irrigation potential, drainage needs, suitability for a reservoir and needed erosion control practices.

Woodland owners can find a list of species to plant on various soil types as well as productivity ratings and soil management concerns.

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

Real estate. With a soil survey, home buyers can evaluate new lots and homes for potential problems such as flooding, seepage, foundation cracking, erosion and septic system failure.

Builders and developers can design subdivisions to accommodate the soil conditions and patterns found on the landscape. Proper construction methods and materials can overcome most soil hazards.

The survey can also help locate areas with soil properties favorable for industrial development.

Waste disposal. Communities can evaluate potential sanitary landfill and sewage lagoon locations by consulting soil and geological information. A soil survey can tell whether a site is suitable for an individual septic or lagoon system. Waste disposal methods and construction practices should be adapted to fit specific soil characteristics.

Highways and utilities. Soils information is essential in the design and construction of roads, pipelines and utility lines. The soil survey points out problems such as flooding, wetness, slope, erodibility, corrosion potential, depth to bedrock, shrink-swell potential and bearing capacity.

Land use. Soil surveys can aid local government officials and others in decisions on offering building permits, planning utility extensions, evaluating land, preserving prime agricultural land and reclaiming mined land.

Recreation. The reports can assist in evaluating areas for wildlife habitat, parks, campgrounds, ball fields, golf courses and other activities.

Status of Survey Program

Field work has been completed for almost half of Missouri. See Table 1. Soil survey reports of 32 counties are available for public distribution. An additional 15 counties are completely mapped and awaiting

publication. Currently, soil scientists are mapping soils in 25 counties.

Over 50 soil scientists are involved in the statewide survey. Mapping an average-sized county requires about 10 man-years of field work. A completed soil survey costs approximately \$1.25 per acre.

To meet manpower and research requirements and to satisfy the needs of many different users, the Missouri soil survey program is a cooperative effort among many organizations. The members of the cooperative program are the Missouri Soil and Water Conservation Districts and the Department of Natural Resources, the University of Missouri Agricultural Experiment Station and Extension Service, and the U.S. Department of Agriculture's Soil Conservation Service and Forest Service.

The organizations cooperating on the survey hope to complete every county by 1990. County soil and water conservation districts may apply for state assistance to accelerate the progress of their soil surveys. Members of the cooperative program set priorities on the basis of local interest, contributions and needs.

How to Obtain Soils Information

Copies of a county soil survey report are free to Missouri residents from soil and water conservation districts, the Soil Conservation Service office or the University of Missouri Extension Center. Copies of all published soil surveys in Missouri can also be ordered from Extension Publications, 222 South Fifth Street, University of Missouri, Columbia, MO 65211. Non-residents are charged \$4 a copy.

In counties currently being mapped, preliminary soil survey field sheets are available for public use. Contact the district conservationist in the county Soil Conservation Service office to check on the current progress of the survey and the availability of soils information.

Other general information sources are the soil reconnaissance maps made for many counties in Missouri before 1940. These maps can be used for broad planning or as an historical reference. Public libraries, historical societies and the Missouri State Historical Society in Columbia have reference copies. A limited number of these maps are available upon request. Write to Agronomy Extension, 214 Waters Hall, University of Missouri, Columbia MO., 65211.

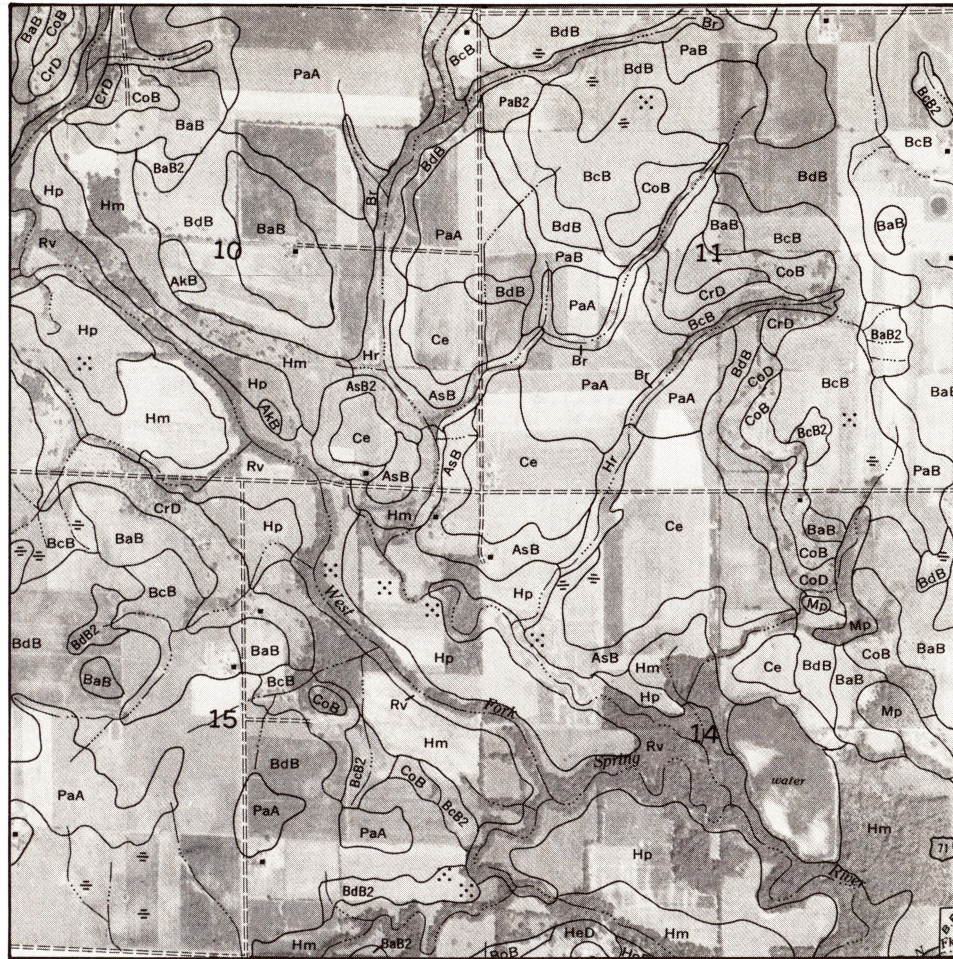
Table 1. Status of County Soil Surveys

Key to Codes:

- A - Modern survey available
- B - Modern survey complete with estimated publication date
- C - Extensive mapping done with estimated completion date
- D - Mapping just begun
- E - No survey started
- * - Old soil reconnaissance survey

County	Code	Date	County	Code	Date
Adair	E		DeKalb	A*	1977
Andrew	C*	7/84	Dent	A	1971
Atchison	E*		Douglas	E	
Audrain	E*		Dunklin	A*	1979
Barry	E*		Franklin	C*	6/84
Barton	A*	1974	Gasconade	E	
Bates	E*		Gentry	C	1/82
Benton	D		Greene	B*	3/82
Bollinger	E		Grundy	E*	
Boone	A	1962	Harrison	A*	1979
Buchanan	C*	4/84	Henry	A	1976
Butler	B	3/85	Hickory	E	
Caldwell	A*	1974	Holt	A	1953
Callaway	C*	5/84	Howard	A	1978
Camden	D		Howell	D*	
Cape Girardeau (Multi-county publication with Mississippi and Scott)	A*	1981	Iron	D	
Carroll	D*		Jackson	B*	3/83
Carter (See also Mark Twain National Forest)	E		Jasper	A	1954
Cass	B*	11/83	Jefferson	E	
Cedar	E*		Johnson	A*	1980
Chariton	E*		Knox (Multi-county publication with Monroe & Shelby)	A*	1979
Christian	B	5/83	Laclede	D*	
Clark	E		Lafayette	A*	1975
Clay	B	4/85	Lawrence	B*	3/82
Clinton	B	10/82	Lewis	E	
Cole	E*		Lincoln	C*	7/84
Cooper	E*		Linn	C*	9/84
Crawford	E*		Livingston	A	1956
Dade	E		McDonald	E	
Dallas	C	5/84	Macon	E*	
Daviess	A	1964	Madison	E	
			Marion	E	
			Marion	B*	12/84
			Mark Twain National Forest (Doniphan, Van Buren & Winona Ranger Districts)	A	1975
			Mercer	E	
			Miller	D*	
			Mississippi (See Cape Girardeau)	A*	1981
			Moniteau	A	1964
			Monroe (See Knox)	A	1979
			Montgomery (Multi-county publication with Warren)	A	1978
			Morgan	E	
			New Madrid	A	1977
			Newton	C*	7/83
			Nodaway	C*	1/83
			Oregon (See also Mark Twain National Forest)	E	
			Osage	E	
			Ozark	E	
			Pemiscot	A*	1971
			Perry	C*	3/83
			Pettis	E*	
			Phelps	C	7/85
			Pike	E*	
			Platte	B*	4/83
			Polk	E*	
			Pulaski	D	
			Putnam	E*	
			Ralls	B*	12/84
			Randolph	D	
			Ray	C*	1/82
			Reynolds	E*	
			Ripley (See also Mark Twain National Forest)	B*	3/85
			St. Charles	B*	7/82
			St. Clair	C	6/83
			St. Francois	A*	1981
			St. Louis	B*	3/82
			Ste. Genevieve	B	3/83
			Saline	E*	
			Schuyler	E	
			Scotland	A*	1975
			Scott (See Cape Girardeau)	A	1981
			Shannon (See also Mark Twain National Forest)	E	
			Shelby (See Knox)	A*	1979
			Stoddard	C*	6/82
			Stone	E	
			Sullivan	E*	
			Taney	E	
			Texas	E*	
			Vernon	A	1977
			Warren (See Montgomery)	A	1978
			Washington	E	
			Wayne	E	
			Webster	E*	
			Worth	A	1968
			Wright	A	1981

Figure 1. Soil Survey map, Barton County, Missouri, sheet number 32, sections 10, 11, 14, 15, Township 31 North, Range 31 West. (Map not to scale.)



Soil Legend

Map Symbol

Map Symbol	Soil Name
AkB	Askew fine sandy loam, 2 to 5 percent slopes
AsB	Askew silt loam, 2 to 5 percent slopes
AsB2	Askew silt loam, 2 to 5 percent slopes, eroded
BaB	Barco fine sandy loam, 2 to 5 percent slopes
BaB2	Barco fine sandy loam, 2 to 5 percent slopes, eroded
BcB	Barco loam, 2 to 5 percent slopes
BcB2	Barco loam, 2 to 5 percent slopes, eroded
BdB	Barden silt loam, 1 to 4 percent slopes
BdB2	Barden silt loam, 1 to 4 percent slopes, eroded
BoB	Bolivar fine sandy loam, 2 to 5 percent slopes
Br	Breaks - Alluvial land complex
Ce	Cherokee silt loam
CoB	Collinsville fine sandy loam, 2 to 5 percent slopes

CoD

CrD

HcB

HcD

HeD

Hm

Hp

Mp

PaA

Rv

CoD	Collinsville fine sandy loam, 5 to 14 percent slopes
CrD	Collinsville stony fine sandy loam, 2 to 14 percent slopes
HcB	Hector fine sandy loam, 2 to 5 percent slopes
HcD	Hector fine sandy loam, 5 to 14 percent slopes
HeD	Hector stony fine sandy loam, 2 to 14 percent slopes
Hm	Hepler silt loam
Hp	Hepler silt loam, overwash
Mp	Mine pits and dumps
PaA	Parsons silt loam, 0 to 1 percent slopes
Rv	Radley and Verdigris silt loams

Spot Symbols

Represent soil areas less than 2 acres in size

∴ Sand spot

≡ Severely eroded spot

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