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DIGITIZED SOIL MAPS FOR IOWA

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Introduction

The Iowa Cooperative Soil Survey initiated a program in 1987 to transfer printed soil maps in each county soil survey report to an electronic database. The purpose of this cooperative project is to provide a computerized database of the county soil maps to support federal, state, local and private sector decision making concerning use and management of Iowa's soil resources.

Digitized soil maps and a computerized file of soil attributes and interpretations will result in ready access to each county soil survey. Users will have access to a one-to-one transfer of published soil maps in an electronic format as well as updated interpretations and a listing of soil properties not printed in published soil survey.

Computer software for the digitized soils data is available through the Iowa Soils Program (ISOIL). ISOIL consists of digitized soil maps and a supporting database. The computerized soil map data provides users with the capability to view one legal land section (640 acres if uncorrected during the original land survey) and to manipulate the soil map units (soil delineations) within the section.

The ISOIL program consists of a total of 80 different soil interpretations and soil properties for each soil map unit. Examples of soil interpretations include selected crop yield estimates, corn suitability rating, land capability classes, and soil permeability classes. Soil properties include such attributes as depth to carbonates, topsoil thickness, percent organic matter in the surface layers, and cation exchange capacity as examples.

The ISOIL program provides users with the capability to delineate sub-tracts within a legal land section. In addition, users can calculate the acreage by soil map unit within the sub-tract and calculate weighed averages for different interpretations for the land section or sub-tracts within the section.

Hardware Requirements

There are two sets of requirements that must be met by the user in hardware selection in order to support the development of soil survey map data and run software programs used to access, display and interpret soil maps.

The soil map data requires that the microcomputer have either a 5 1/4 inch or a 3 1/2 inch floppy disk drive for data input. We recommend a forty M-byte (40M-byte) hard disk be available to store the data if the coverage of an entire county is being required. For a few of the larger Iowa counties, a sixty M-byte (60M-byte) hard disk may be necessary. The soil survey map data is delivered in tier-range increments of approximately 1.5M-bytes per legal township. A standard 16-township county will occupy approximately 25M-bytes of the 40M-byte hard disk. The remaining storage on the hard disk will contain programs, interpretive data files and extracts from the map data created by the user.

The second set of requirements relates to the programs used to retrieve, interpret and display soils information from databases. These programs require an EGA color graphics card with 256K of video memory, MS-DOS operating system (2.2 or later version and IBM-PC compatible) and at least 512K bytes of memory (RAM).

From this information we can summarize the requirements as follows:

- IBM-PC compatible micro-computer
- 5 1/4 or 3 1/2 inch floppy drive system
- 40M-byte hard disk system for an entire county (60-byte for larger counties)
- 512K bytes of memory (RAM)
- Minimum of EGA color display adapter with 256K of video memory and color monitor
- MS-DOS operating system (2.2 or later version)

We recommend an AT class computer be selected which meets these requirements. The IBM-PC, AT or compatible computer will provide a good balance between meeting the minimum requirements and providing satisfactory response in operating the program.

Optional Equipment

Digitizing tablet: This allows the user to delineate land areas from an aerial photograph or other map sources. Any tablet supporting summagraphics data format is compatible with the program.

Printers: The current software supports the HP Paintjet, the HP Laserjet and any dot matrix printer that can emulate an Epson.

ISOIL Software Availability

Users can purchase the ISOIL software program on a legal township basis (36 sections) or on a whole county basis. Inquires as to availability of ISOIL software can be directed to: Extension Software Services, 108 Atanasoff Hall, Iowa State University, Ames, Iowa 50011.

Plans call for releasing of ISOIL software for three counties during early 1991. These counties are Cherokee, Clarke, and Marion. Other counties scheduled for release during 1991 include Carroll, Dallas, Johnson, Linn, Mahaska, Mitchell, Pocahontas, Sioux, and Washington.

A schedule is in place to release ISOIL software for each Iowa county by the end of 1993 or when the soil survey correlation is finalized. Counties in this latter group where fieldwork is currently underway includes Humboldt, Jefferson, Lucas, Monona, Polk, and Van Buren.

Cooperating Agencies

The Iowa Soils (ISOIL) program is a product of the Iowa Cooperative Soil Survey Program. Cooperating agencies are:

Cooperative Extension Service
Iowa State University

Iowa Agriculture and Home Economics Experiment Station
Iowa State University

Iowa Department of Agriculture and Land Stewardship
Division of Soil Conservation

USDA Soil Conservation Service