Computerization of Soil Information in Minnesota

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A substantial development effort has been made by the Minnesota Cooperative Soil Survey during the past few years to provide in computer-retrievable form soil survey and related information. The Minnesota Agricultural Experiment Station has been the leading agency for this effort. The USDA-SCS has provided some funds for the initial effort. Leadership has been provided primarily by Dr.'s Pierre Robert and Richard Rust of the Station. A summary of this effort follows.

Software Developed

The primary software system developed was the Soil Survey Information System (SSIS). The objective was to provide soil survey information in a form that could be retrieved and used by individuals within a specific county (Robert and Anderson, 1986). The system consists of: (i) factual and interpretive information contained in a standard soil survey report, (ii) digitized soil maps, (iii) crop equivalent rating (CER) for all soils in the survey area, and (iv) a program for recalling and manipulating that information. In addition, supplemental software for specific uses and needs has been developed for use with the SSIS. Examples are programs for the following uses: (i) determining land eligibility for conservation reserve programs, (ii) calculating a weighted average CER by ownership parcel or field, (iii) determining soil test samples by field (Anderson and Robert, 1986), (iv) evaluating the potential for wind and water erosion under different cropping systems on a given field, (v) recommending best-suited conservation tillage systems, and (vi) evaluating the kind of individual sewage treatment system for selected soils. A discussion of three of these software systems follows.

Soil Survey Information System

The SSIS was developed for a minimum of hardware. The SSIS is operated with an IBM (or compatible) personal computer with at least 512K of memory, two floppy disk drives, a standard monochrome adapter and display, a standard graphics adapter and display, and a dot matrix printer. It can also be used on IBM PC/XT/AT and compatible systems.

The cost of providing the SSIS for an average size county (about 20 townships) in Minnesota ranged from $1,000 to $1,200 per township depending on the complexity of the soil pattern.