National Cooperative Soil Survey Newsletter

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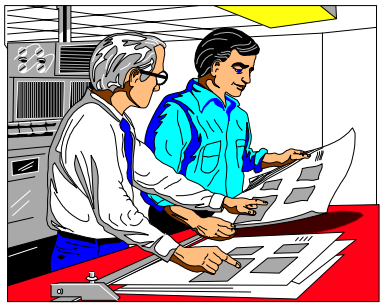
Editor's Note

Issues of this newsletter are available on the World Wide Web (www.statlab.iastate.edu/soils/soildiv). Click on NCSS and then on the desired issue number of the NCSS Newsletter.

You are invited to submit stories for future issues of this newsletter to Stanley Anderson, National Soil Survey Center, Lincoln, Nebraska. Phone—402-437-5357; FAX—402-437-5336; email—stan.anderson@nssc.nrcs.usda.gov.



Ancient Chinese Representation of Soil

By Robert J. Ahrens, Director, National Soil Survey Center, Natural Resources Conservation Service, Lincoln, Nebraska.

Last year the National Cooperative Soil Survey celebrated the centennial year of providing quality information to the American public. We in the U.S. are very proud of our success and commitment to the soil resource. For obvious reasons, soil has been important to all civilizations. The examples below from China illustrate another culture's esteem for the soil resource.

The character ± is an ingenious Chinese symbol for soil (fig. 1) that has been used for hundreds of years. The first interpretation of the symbol comes from Xushen (58-147 A.D.), who noted that the upper horizontal stroke refers to the topsoil, the lower horizontal stroke refers to the subsoil, and the vertical stroke refers to plant parts growing above and below the surface of the soil. The symbol illustrates the close relationship between the soil and plants and parallels modern definitions of the soil by pedologists.

Almost every Chinese emperor used the land and grains altar (fig. 2) to implore the aid of the Land God and Grain God for a good harvest and national tranquility. The altar was first established during the Zhou Dynasty (1000-771 B.C.). Zhongshan Park, Bejing, displays the land and grains alter built during the Ming Dynasty in 1421. The colors of the altar illustrate the general distribution of soils in China. The soils of the northern, cool parts of China accumulate organic carbon and are portrayed as black. The eastern parts of China have many poorly drained or gleyed soils and are represented in blue. The warmer, humid areas of southern China have red soils. Much of western China is arid, and the soils with salt accumulation are shown as white. The loess plateau of central China has yellow soils. Thus, this altar represents the first known general soil map. ■

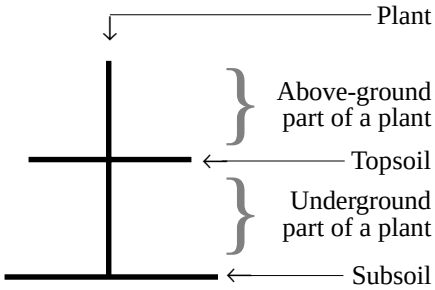


Figure 1.—Interpretation of the Chinese character "soil."

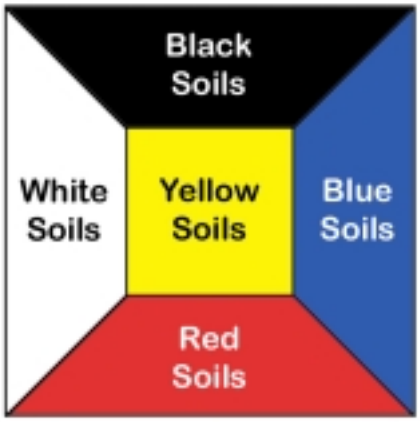


Figure 2.—A representation of the ancient land and grains altar serves as a general soil map of China.

Digital General Soil Map of the United States—STATSGO Update FY 2000-2001

By Fred Minzenmayer and Sharon W. Waltman with maps by Adrian Smith, United States Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center.

The Soil Survey Division of the Natural Resources Conservation Service has given high priority to the goal of delivering an updated national version of the State Soil Geographic Data Base (STATSGO), called the "Digital General Soil Map of the United States," by the end of FY 2001. STATSGO is a collection of digitized state general soil maps compiled at a scale of 1:250,000 (1:1,000,000 for Alaska) and covering all lands (private and public) in the United States. It is used as a layer in the Geographic Information System (GIS) for making soil interpretations, assessing soil resources, ecoregion mapping, and policy planning. STATSGO was designed to provide quality soil information for multicounty, state, multistate, regional, and national planning. It has been used in NRCS river basin and state-of-the-land studies to show the geographic distribution of national soil resources. It is used extensively by other federal agencies, state agencies, universities, industry, international governments, and the general public. When most regional or national soil thematic maps are made, 1994 STATSGO data are used.

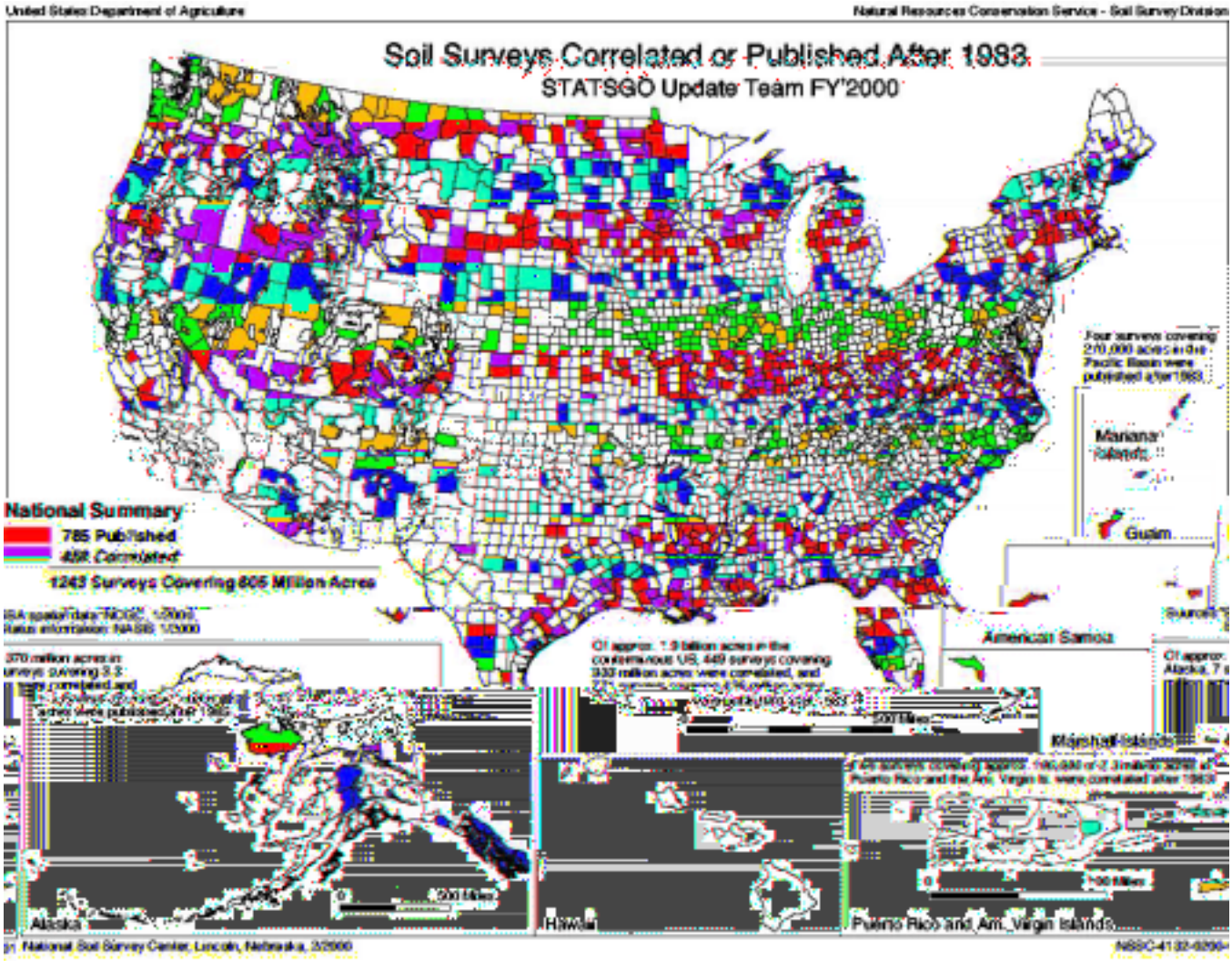


Figure 1

Several update issues are related to the age and quality of these data. STATSGO map data, attribute data, and metadata are outdated and do not adequately meet NRCS program needs. STATSGO was started in 1984 and published in 1994 on CD-ROM and the WWW (http://www.ftw.nrcs.usda.gov/stat_data.html). The current STATSGO data are not in sync with our general soil maps, which are based on our detailed soil survey data. Also, the STATSGO attribute data model is not compatible with the National Soil Information System (NASIS) data model. Figure 1 shows that 1,243 soil surveys covering about 805 million acres across the nation have been correlated or published since 1983, the year before the original STATSGO project began. The update is needed because the current data are becoming obsolete and are not the best data to provide answers to national, regional, or state questions or to develop and test new kinds of NASIS-based interpretations for the nation.

To accomplish it's goal, the Soil Survey Division established a STATSGO Update Team for FY 2000. The mission of the STATSGO Update Team is to provide standards and guidance for the development of map data, attribute data, and metadata into a high-quality soil geographic data base that will meet national agency and customer needs. The team will focus on data quality, data integration, data delivery in formats compatible with mainstream GIS software and computer platforms, and data use, including technical support, user guides and documentation, and software interfaces.

The STATSGO Update Team is lead by Fred Minzenmayer, (fminzenm@ftw.nrcs.usda.gov), Soil Scientist, NSSC, Ft. Worth, Texas. Team membership includes Chad McGrath, State Soil Scientist/MO

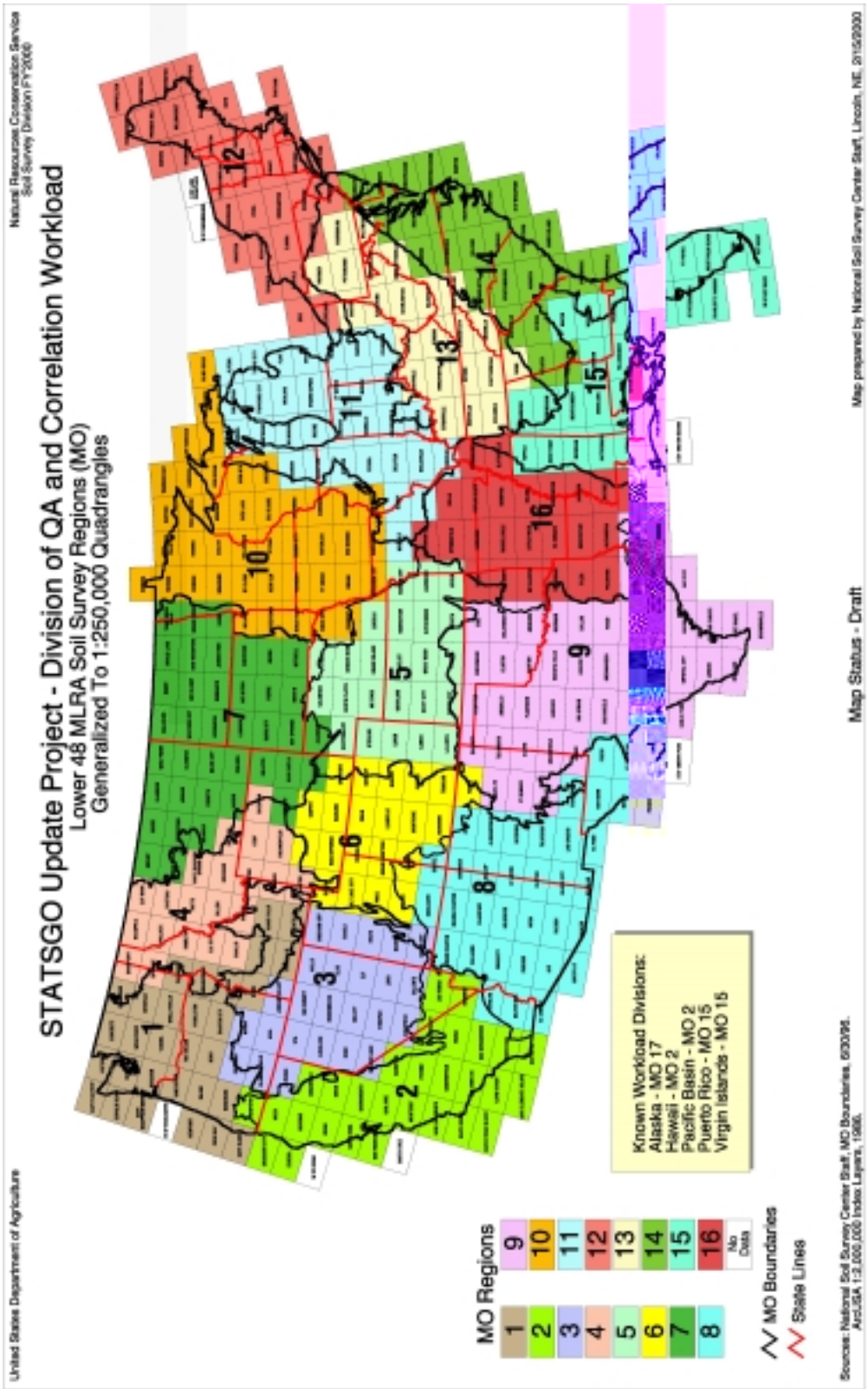

United States Department of Agriculture
Natural Resources Conservation Service
Soil Survey Division FY 2000
STATSGO Update Project - Division of QA and Correlation Workload
Lower 48 MLRA Soil Survey Regions (MO)
Generalized To 1:250,000 Quadrangles
MO Regions
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
No Data
MO Boundaries
State Lines
Known Workload Divisions:
Alaska - MO 17
Hawaii - MO 2
Pacific Basin - MO 2
Puerto Rico - MO 15
Virgin Islands - MO 15
Map Status - Draft
Map prepared by National Soil Survey Center Staff, Lincoln, NE, 2/15/2000
Sources: National Soil Survey Center Staff, MO Boundaries, 6/30/96.
ArcUSA 1:2,000,000 Index Layers, 1996.

Figure 3

Scanning Soil Surveys Onto CD's

By Aaron Achen, Editor, MLRA Soil Survey Region 15, Natural Resources Conservation Service, Auburn, Alabama.

In many areas, printed copies of published soil survey reports are not available because of the age of the survey or because the number of copies made in the initial printing was insufficient. In these areas, the NRCS field office can distribute only photocopies of the survey. The surveys are not reprinted because of the cost of printing or because the printing materials are no longer available.

Out of the several thousand published soil survey reports, only about 100 are readily available in electronic format. Essentially, all of these available surveys were published in the last 3 years. Older surveys are typically available only in printed format.

Recent advances in software have made it possible to transfer any published, paper-copy survey into a common electronic format. Prototypes have demonstrated that the process of creating the master CD of a survey only takes 2 to 5 days and is possible using software and hardware already available at many MLRA offices. The individual pages and maps of the survey are scanned, compressed, and formatted so that they can be read using an Internet browser, such as Netscape Navigator or Microsoft Internet Explorer. Although the detailed soil maps do not print out with the same quality as the originals, the on-screen image is very good. Higher quality printouts of the maps will become practical as DVD technology becomes more prevalent and less expensive.

The primary niche for the CD's could be those areas where high-quality reports suitable for public distribution are needed but the printed soil survey report is currently unavailable and reprinting is not cost effective. The CD's could also be used to reduce the number of copies needed during a reprint and for those customers who prefer an electronic product over a printed product. Copies can be made for as little as $2 each, have little or no storage cost, and can be made in small quantities as needed. The CD's could be distributed directly to the public or could be used to print selected sections on demand in field offices.

I have scanned nine surveys onto CD, have committed to scan nine more, and have requests for as many as I have time for. Every State for which I have scanned a survey has requested that I scan others. The CD's are labeled as "Historical Replica" (fig. 1) to avoid confusion with the official copy, and users are advised that the maps do not print out identically to those in a printed copy of the report.

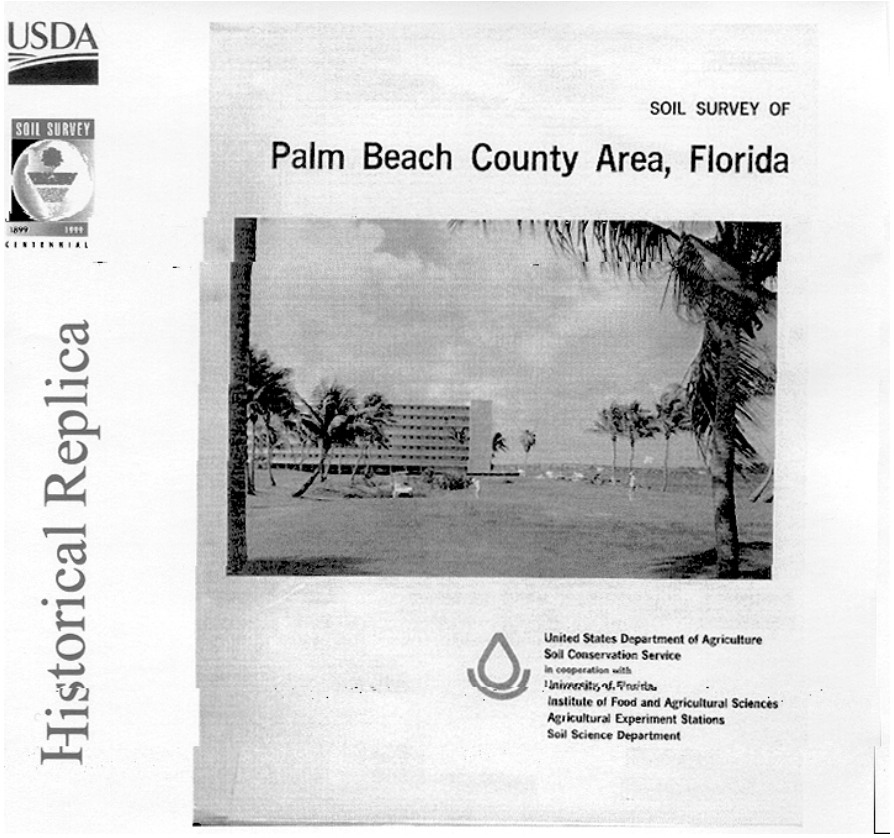


Figure 1.—The cover of a soil survey that has been scanned onto a CD.

The initial investment in hardware and software would vary, depending on what is already available. The minimum requirements are a Pentium-class computer with a gigabyte of free storage and a scanner ($200 for the scanner), PageMaker ($500), and a CD recorder ($250). A large number of enhancements are available at varying prices, including software to install links in the files (Acrobat, $220), software to increase scanning efficiency (OmniPage, $500), and larger scanners to provide single-image scans of quarter-quad maps ($2,000) or full-quad maps (up to $20,000). ■

UnixWare Upgrade Implementation Progressing Well

Unix servers will remain critical to field ops for awhile longer.

From "ITC NewsFlash," February 15, 2000, http://www.itc.nrcs.usda.gov.

The implementation of the latest UnixWare upgrade, Version 2.1.3, is progressing well, with minimal problems, largely because of the extensive beta testing and joint efforts between the NRCS and the vendor.

"We worked closely with SCO from October right up to the end of the year," says Paige Niederer of the Hardware Integration Lab at the Information Technology Center in Fort Collins, Colorado.

The CD containing UnixWare 2.1.3, which was distributed to NRCS offices two weeks ago, was tested against the five major platforms in use throughout the NRCS: Digital Prioris; AT&T Globalyst 630; NCR3333; Digital Server 1000; and Micron NetFrame.

"We did the beta testing at five sites, on actual Field Service Center and state office servers," says Niederer, who served as Project Leader for the upgrade effort.

The upgrade was tested for its performance on operations ranging from DNS service and email to a variety of web services. The implementation of UnixWare 2.1.3 will not only enhance such functions but also provides the agency servers with greater security. In addition to being certified as Y2K compliant, the upgrade comes with beefed up security features.

"Also, we have support for 2.1.3, which was the biggest reason for this upgrade" Niederer points out. "UnixWare 2.0.3 (the previous version running on agency UnixWare servers) had become an unwarranted product over two years ago."

The beta testing itself went smoothly with only a few minor problems that needed fixing. Other issues that have come up so far have been addressed with some simple workarounds or patches. To date, such issues have been related to sendmail and report printing in a couple of applications.

The UnixWare upgrade was also tested for NT connectivity, which went relatively smoothly, according to Niederer.

"Any problems with NT connectivity that existed in 2.0.3 still exist with 2.1.3, but the difference is that now we have the support."

The UnixWare operating system has been an agency workhorse for half a decade. Beginning with the 1995 implementation of Version 1.1 with the commissioning of the NCR platforms, UnixWare has performed well on the succession of agency server platforms that followed.

While partnering agency plans include a transition to NT servers, the UnixWare servers will remain in their critical role for a while longer.

"We're probably looking at a year to 18 months before those servers are replaced," says CCE Project Manager Scott Snover. That timeframe, according Snover, "is a major justification of the current UnixWare upgrade."

The testing and production involved in the upgrade project was a success on a personal level, says Niederer. "The teamwork involved in this project was excellent."

She cites SCO representatives Bob Espesido, Warren Williams, Carl Moses and Kumar Talluri for "diligently helping to solve problems as they came up." On the government side, Niederer credits Minnesota IT specialist Rich Dougherty, Gloria Weimern of the Hardware Integration Lab, and Tom Rudnick of the ITC Telecommunications Team for their work on the project. ■

Note on the *Field Book for Describing and Sampling Soils*

By Stanley P. Anderson, Editor, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.

The *Field Book for Describing and Sampling Soils*, Version 1.1 (1998), has been translated into Spanish by soil scientists of the Federal agricultural program in Argentina. This translation will be published in the year 2000 by the United States Department of Agriculture, Natural Resources Conservation Service. The National Soil Survey Center in Lincoln, Nebraska, is currently preparing the work for publication.

The English version of the field book, which is in high demand, is in the process of being updated. The updated field book will be available for distribution in the near future. ■

Language Matters

By Stanley P. Anderson, Editor, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.

A linguistics professor was lecturing to his class one day. "In English," he said, "A double negative forms a positive. In some languages, though, such as Russian, a double negative is still a negative. However, there is no language wherein a double positive can form a negative."

A voice from the back of the room piped up, "Yeah, right." ■

Publication of *Keys to Soil Taxonomy for Finland*

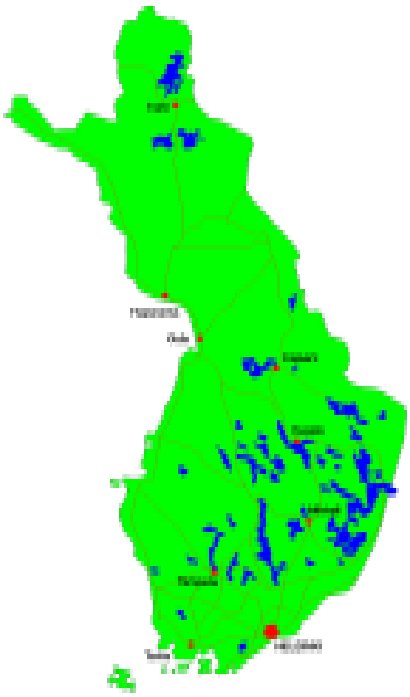
By Henry R. Mount, Soil Scientist, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.

A PDF file of the *Keys to Soil Taxonomy for Finland* will be posted to the NRCS home page, under the Deputy area "Soil Survey and Resource Assessment," Soil Survey Division, World Soil Resources, Online References, Technical References (http://www.nhq.nrcs.usda.gov/WSR/). This publication, which is in English, is taken from the eighth edition of *Keys to Soil Taxonomy* (1998). It is a short booklet (about 30 pages long) that includes only the soil orders, suborders, great groups, and subgroups recognized in Finland. Paper copies are being printed by the National Production Services Staff in Fort Worth, Texas. The citation for the work is as follows:

> Mokma, Delbert L., and M. Yli-Halla. 2000. *Keys to Soil Taxonomy for Finland*. United States Department of Agriculture, Natural Resources Conservation Service.

In the May 1998 issue of the NCSS Newsletter, Dr. Mokma made the following comment about the development of this booklet:

> Because the *Keys to Soil Taxonomy* is computerized, it was easy to select the orders and then delete the portions that do not apply to Finland. This process of selection could be used in other countries where soil scientists are reluctant to adopt the system described in *Soil Taxonomy* as their national soil classification system. A state or MO might wish to prepare similar keys for its state or area. This technique could be used in teaching soil classification to students who are interested only in the soils of a limited area. ■



Soil Survey Horizons

By Michael G. Ulmer, Editor, *Soil Survey Horizons*, Soil Science Society of America, Madison, Wisconsin.

The professional newsletter *Soil Survey Horizons*, which is published quarterly, is a medium for the expression of ideas, problems, and philosophies concerning the study of soils in the field. It has a long history of presenting information to the field soil scientist in an easily understood and readable format.

Anyone interested in subscribing to the publication or in renewing a subscription can use the form on page 8 of this newsletter or can access the web page (www.soils.org) of the Soil Science Society of America (see the periodicals section in the Online Store). Also, a subscription form is printed on the last page of each issue of the publication.

The editorial board needs contributions of manuscripts in order to continue to publish. Articles, announcements, letters, and news items are welcome. ■

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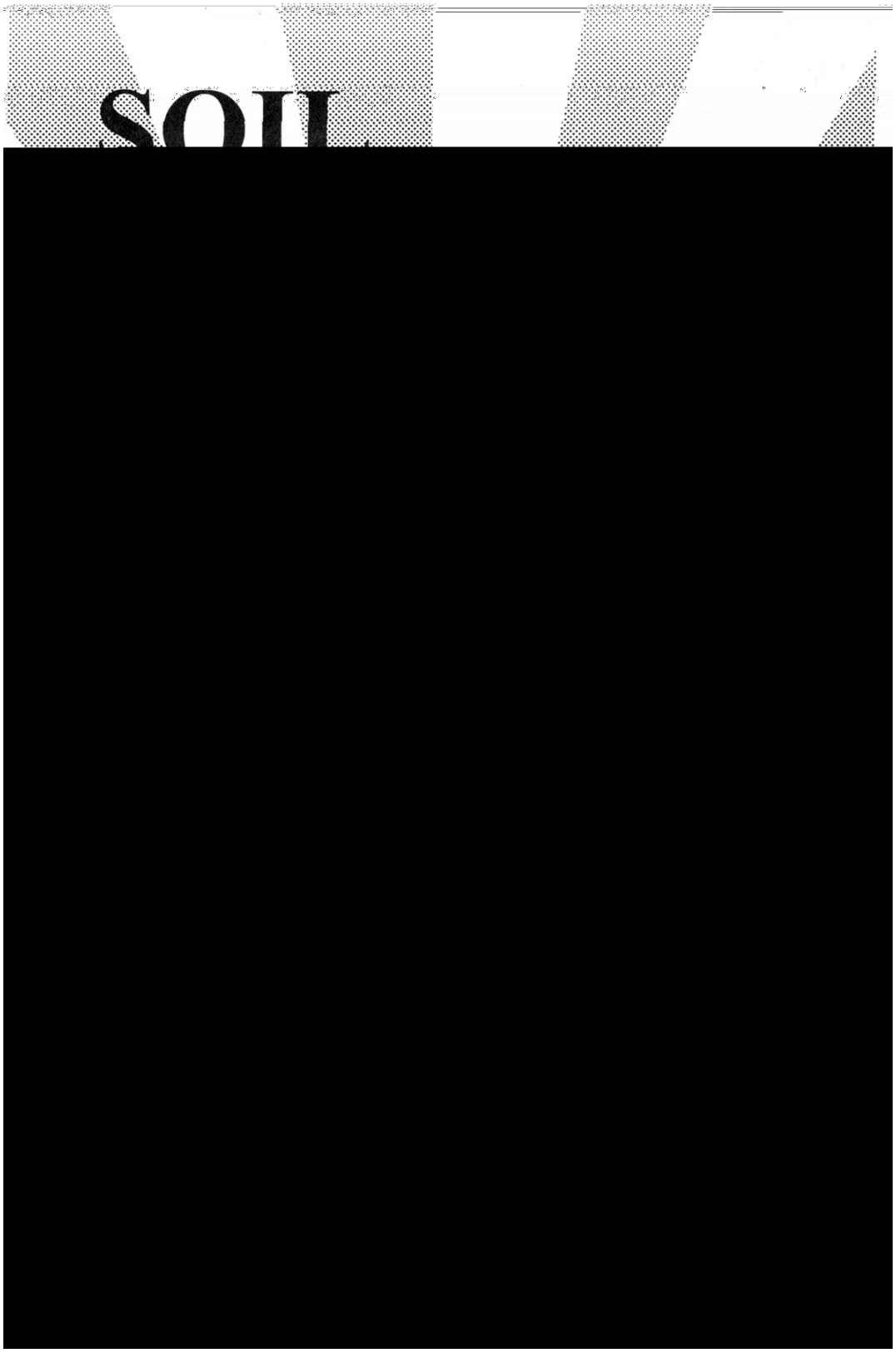
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