Minutes of the 2006 NCERA-3 Annual Meeting
Medora, ND
June 26 and 29, 2006

Administrative Advisor:
Gerald Miller
Iowa State University
132 Curtiss Hall
Ames, IA 50011-1050

Chair:
Terry Cooper
University of Minnesota
439 Borlaug Hall
St. Paul, MN 55108

Chair-Elect:
Mickey Ransom
Kansas State University
1022 Throckmorton
Manhattan, KS 66506-5501

Secretary:
Del Mokma
Michigan State University
584D Plant and Soil Science
East Lansing, MI 48824-1325

Members in attendance:
Ken Olson, IL
Mickey Ransom, KS – Chair-Elect
Terry Cooper, MN - Chair
Neil Smeck, OH
Dave Hopkins, ND
Cynthia Styles, WI
Robert Ahrens, USDA-NRCS representative
Phil Owens, IN
Del Mokma, MI - Secretary
Mark Kuzila, NE
Doug Malo, SD
Maxine Levin, NCSS liaison

Guests:
Randy Miles, MO

Members Absent:
Andrew Manu, IA
A.D. Karathanasis, KY
Jay Noller, OR

Administrative Advisor:
Gerald Miller, IA

Introductions and Agency Reports

Meeting was called to order at 8:00 am on June 26 by Chair, Terry Cooper.

Terry distributed an agenda.

Minutes from the 2005 meeting were approved as distributed.

State reports will be distributed with the minutes.

Administrative Advisor's Report (Gerald Miller)

- G. Miller distributed the NCRA Impact Statement for NCERA-3.

- The Midterm Review is due after the NCERA-3 Meeting. Mickey Ransom and Del Mokma will assist Jerry in preparing a Progress Report for the Midterm Review. Citations for publications, not just numbers, from the past two years must be included.
- Jerry discussed status of the USDA-CSREES FY07 budget.
- Deans and Directors are working to create a new funding mechanism (Create 21) within USDA that combines CSREES, NASS, ERS, and ARS. The proposal includes a position of Chief Scientist. The position will report directly to the Secretary of Agriculture. The goals are to raise visibility and double funding over a 7 year period. The website is: http://www.create-21.org/

USDA-NRCS Report (Bob Ahrens)

- NRCS is reorganizing the Soil Survey Program
- A feasibility study is being conducted to determine if the private sector can do the work of the Soil Survey Center.
- Ag Handbook 296 Major Land Areas was revised and is available on the web. The website is: http://www.soils.usda.gov/survey/geography/mlra/index.html
- Field Indicators of Hydric Soils, version 6.0 is being revised. The list of indicators will be reduced dramatically.
- A new edition of Keys to Soil Taxonomy will be published by Pocahontas Press
- Nineteen requests have been made for scan sites (soil temperature and soil moisture)
- Eleven formal training classes were scheduled.
- NRCS will accept proposals from universities wishing to host future Soil Science Institutes (on-campus training for NRCS field soil scientists)
- Benchmark Soils will be revised. Gaps must be filled. University data will supplement NRCS data.

NCSS Liaison Report (Maxine Levin)

- The Northeast Soil Survey Committee has a funded multistate project that concerns water issues.
- The West Soil Survey Committee has submitted a multistate funded project based on climate issues.
- The South Soil Survey Committee has no funded project but is working to develop a proposal.
- The next National Soil Survey Conference will be in Minneapolis, Minnesota in June 2007.

Old Business

Effects of Management on Soils Committee – Ken Olson

- Proposed changes for eroded conditions to Soil Taxonomy were rejected.
- Two papers were published in Soil Survey Horizons.

- New alternatives are being explored.
- Neil Smeck will present one of the alternatives in the Keynote Address at the North Central Regional Soil Survey Conference.

Education and Training Committee – Mickey Ransom

- No report
- Terry Cooper agreed to take over as Chair of the committee. He will conduct a survey during the fall that will obtain data on education and training needs.

High Intensity Soil Survey Committee – Phillip Owens

- A symposium was organized for the Soil Science Society of America Meeting in 2006 at Indianapolis.

Soil Research and Interpretations Committee – Cindy Stiles

- A survey will be sent to NCERA-3 members and to other regional soil survey committees.
- A similar survey was sent to academic cooperators, state soil scientists, and field soil scientists. A summary was included in the North Central Regional Soil Survey Conference notebook. See Attachment 1.

Ken Olson (IL) was elected secretary for 2007. The secretary for 2008 will be Dave Hopkins.

Kansas will be the next host for the 2008 North Central Soil Survey Conference.

New Business

Dave Hopkins and Mickey Ransom will be the NCERA-3 representatives to the National Soil Survey Conference in 2007. Mickey Ransom and Bryan Slater (OH) will be the representatives for the 2009 Conference.

The history of NCR-3/NCERA-3 will be published in the Fall 2006 issue of Soil Survey Horizons.

Education and training of soil scientists were discussed. Are we meeting the needs of NRCS? Field trips and laboratories are important to stakeholders. Soil judging is a very important activity that is enjoyed by students and was a turning point for career selection. The changes in soil science programs at each university were discussed. In general, there is a reduction in numbers of soil science students, faculty, and funding. Many universities have moved to the business model where outside funding, student credit hours, publications and citations are used to evaluate programs.

Regional Soil Map

- Electronic version of the regional soil map is available from Tom Fenton (tefenton@iastate.edu).
- Research and Interpretations Committee should consider use of this map

- This map should be put on the NIMMS website. Cindy will work to make it more user friendly and Jerry will put it on the website, when available.

Mickey Ransom noted the passing of Dr. Orville E. Bidwell, Professor Emeritus at Kansas State University, on June 5, 2006. Orville was a long-term member of NCR-3.

Meeting adjourned at 12:00 noon

Meeting Reconvened 7:30 am on Thursday June 29.

Bob Ahrens was absent.

Jerry discussed the House Soils Caucus.

Multistate projects were discussed. They are the objective 2 of NCERA-3.

Human impacts on the soil resource in the region could be determined using the regional soil map.

- Loss of prime farmland.
- Soil erosion
- Soil drainage
- Loss of wetlands

This topic was referred to the Soil Research and Interpretations Committee.

Multistate field soils courses were discussed.

- Such courses would be multistate, not necessarily regional
- Summer semester
- Rotate from state to state

This topic was referred to the Education and Training Committee.

Phil Owens and Cindy Stiles will lead the development of a NCERA-3 proposal.

A resolution was passed to express appreciation to Neil Smeck for his many years of service to NCR-3/NCERA-3.

The 2007 meeting of NCERA-3 will be in conjunction with the National Soil Survey Conference in Bloomington, MN in late June. The 2008 meeting will be in conjunction with the North Central Regional Soil Survey Conference in Kansas.

Meeting adjourned 8:30 am.

Approved:

Signed: Del Mokma *9/06/2006*
Del Mokma Date
NCERA-3 Secretary 2006

Signed: Gerald Miller *9/06/2006*
Gerald Miller Date
NCR-3 Administrative Advisor 2006

State Reports

Illinois

Academic Unit: ACES, UIUC, Illinois

Name: Kenneth R. Olson

Summary of Report: Continue to represent the UIUC at county soil survey field reviews and participate in Soil Survey conferences at the state, regional, and national levels. My research activity related to NCERA-3 includes: soil productivity-erosion relationships, evaluation of conservation tillage systems for the restoration of productivity, crop yield prediction by soil type, and quantification of erosion rates studies. The effects of tillage on soil carbon sequestration is also being studied on sloping and eroding soils in southern Illinois. An ongoing research project related to land degradation links teams of soil scientists from UIUC with Moscow State University (Russia) geographers. Presented a proposal to 2005 NCSSC to permit soils subjected to eroded conditions to qualify as mollic epipedons.

Olson, K.R., T.E. Fenton, N.E. Smeck, R.D. Hammer, M.D. Ransom, C.W. Zanner, R. McLeese, and M.T. Sucik. 2005. Identification, mapping, classification, and interpretation of eroded Mollisols in the U.S. Midwest.
Soil Survey Horizons 46:23-35.

Olson, K.R., T.E. Fenton, N.E. Smeck, R.D. Hammer, M.D. Ransom, C.W. Zanner, R. McLeese, and M.T. Sucik. 2005. Proposed modifications of mollic epipedon thickness criteria for eroded conditions and potential impacts on existing soil classifications. Soil Science Society of America. Soil Survey Horizons 46:39-47.

Indiana

Academic Unit: Purdue University

Names: Phillip Owens, Brad Lee and Gary Steinhardt

Summary of Report: All 92 Indiana counties have been initially surveyed and have published soil survey reports. Thirteen counties have been updated at a scale of 1:12,000 and updates are in progress in five additional counties. Four of the update surveys have been published with hard copies and Soil Survey CD's. Six of these counties have hard copy soil maps available. Ten of the update surveys have manuscripts available online at the Web Soil Survey. The remainder of the Indiana soil surveys are being recompiled on orthophoto and digitized. 79 counties now have been digitized, including the update surveys. The remaining counties all have digitizing or compilation in progress. All surveys with digitizing completed are released on CD as Soil Survey Interim Reports. 25 surveys have Soil Survey publications online at the NRCS Indiana State Web Site. The 79 counties that are digitized have spatial and tabular data available online at the Soil Data Mart and Web Soil Survey. The remainder of the 92 counties all have tabular data available online at the Soil Data Mart. Maintenance to soil surveys in Indiana is now being done on a MLRA and landform basis. NRCS currently has 22 soil scientists working in Indiana as follows: 3 Resource Soil Scientists (1 vacant); 3 Student Trainees, 1 Soil Scientist on the Planning & Technology Staff at the Indiana State Office, 9 Soil Scientists working on project Soil Surveys in three MLRA project offices and 1 subset soil survey office 6 Soil Scientists in the MLRA Soil Survey Region 11 Office

Research Activities:

- Determining the relationship of seasonal water tables and water movement in soils within benchmark catenas to soil hydrology, pedological features and hydric soils indicators.
- Quantification of the spatial variability of soil properties and trace elements within benchmark catenas using maps created by soil evaluations, digital elevation models, remote sensing and geostatistics.
- Characterization and classification of reclaimed mine-soils and the relationship to soil survey interpretations for cropland yield estimations.
- Relationship of order 1 and order 2 soil surveys to measured georeferenced yield monitors to compare with the predicted soil survey yield interpretations.
- Characterize the hydraulic conductivity variations between the concentric series of recessional moraines formed from the Erie-Ontario glacial lobe in northeastern Indiana.
- Identify the clay mineral properties of the illitic soils of MLRA 111.
- Explore the effect of hillslope position on the in situ saturated hydraulic conductivity patterns on a northeastern Indiana moraine.
- Characterize the spatial distribution of water limiting horizons across a watershed with geophysical methods.
- Evaluate the utility of geophysical methods to determine the location of septic systems.

Classes: Introduction to Soil Morphology, Soil Morphology Geography, Soil Conservation & Management, Remote Sensing of Land Resources, Soil Classification &

Survey, Forest Soils, Soils and Land Use, Soils Genesis and Classification, Soils and Septic Systems.

Publications: Research: 9, Abstracts: 12, Extension publications: 5

Iowa – No Report

Kansas

Academic Unit: Kansas State University

Name: Michel D. Ransom

Summary of Report: Updates of soil surveys will be done on a multi-county (MLRA) basis. Updates are in progress in MLRA 72, 73, 74, 77, 79, and 106. All updates will be on a 1:12,000 ortho-quad base. Most surveys in Kansas have been published at a scale of 1:20,000 and are not geo-referenced. The soil surveys for all counties in Kansas are digitized up to NRCS standards for SSURGO certification. This work was completed by the Agronomy Department, the Geography Department, and NRCS as part of an effort to develop a statewide GIS. The work was completed in the Geographic Information Systems/Spatial Analysis Laboratory of the Geography Department. A Soil Characterization Laboratory analyzed about 500 grab samples in FY06 for the soil survey program.

Research Activities:

- Clay translocation and carbonate accumulation in central and western Kansas using soil micromorphology
- Distribution and properties of clay minerals in Kansas soils with emphasis on fertility
- Soil genesis and parent material stratigraphy in the Bluestem Hills
- Development of the Kansas Irrigated Productivity Index for Kansas soils
- Carbon sequestration using benchmark sites to estimate soil organic C stocks
- Cooperative work with NC-1018, Impact of Climate and Soils on Crop Selection and Management

Outreach and Extension Development:

- USDA-NRCS Advisory Panel to the Director of Soil Survey
- Kansas Soil Survey Technology and Work Planning Conference
- Kansas Association of Professional Soil Classifiers Annual Meeting
- North Central Soil Survey Conference Steering Committee
- North Central Soil Survey Conference Soil Taxonomy and Standards Committee
- National Committee for Soil Science of the National Academy of Science, Representative for the Soil Science Society of America

Publications (2005-06): Peer-reviewed journal articles: 5; Abstracts: 3

Courses taught: Soil Judging, Soil Genesis and Classification, Soil Mineralogy

Kentucky – No Report

Michigan

Academic Unit: Michigan State University

Name: Delbert L. Mokma

Summary of Report: In 2005 the field work for the soil surveys of the final counties was completed. Eight counties are awaiting publication. The manuscripts for three counties are in preparation. An update soil survey for Isle Royale National Park is in progress. Soil surveys for 71 of the 83 counties have been published however those for 34 of the counties are out of print. Soil Surveys for 41 counties have been digitized and are available on CD-ROM.

Research Activities:

- Bacteria and virus removal from wastewater by soils
- Spodosol formation in Finland

Outreach and Extension Development:

- Interagency meetings – 13
- Two-day training courses – 8

Publications: Peer-reviewed - 1

Courses taught: Soil Resources

Minnesota

Academic Unit: University of Minnesota, Soil, Water & Climate, 1991 Upper Buford Circle, St. Paul, MN 55117

Name: Terence H. Cooper, Professor, tcooper@umn.edu

Summary of Report:
Minnesota Soil Survey Program: 53 published surveys of 87 counties. Update mapping = 9 completed; Maintenance Mapping = 19; Initial mapping = 4; 4 Mapping completed –to be published on web when SSURGO certified; 2 no survey and no survey in progress (Lake and Cook counties). 66 counties are SSURGO Certified. NRCS has five MLRA coordinators and 12 state staff in support of 24 field soil scientists. MAES has 15 different projects in place to aid various segments of the soil survey program. Many of the projects deal with wet soils or spatial variability. New workshops for wetland

delineators and ISTS personnel have been given during the year. Dr. Bill Zanner the forest soil science professor has brought some activities from Nebraska his previous location.

Research Activities:

- Anoka Sand Plain Practitioner Training
- GIS/RS Innovative Soil Mapping Update Project
- Historical analysis of soils
- Hydrology of Seasonal Ponds
- Minnesota Wetlands Web Page .
- Minnesota EQB Environmental Review Web Page
- Redoximorphic Features Conference
- Seasonal Saturation in Minnesota Landscapes
- Soil Survey Orthorectification and Digitization in Minnesota
- Spatial variability of pesticide degradation
- Wetland Delineation Training Workshops
- Wet Soil Monitoring Project
- Climosequence effects on loess parent materials across the U.S.Great Plains
- Influence of soils, paleosols, and stratigraphy on well grout performance across Nebraska
- Beaver recolonization of eastern Great Plains agricultural watersheds
- Introduced legumes in grazed wet meadows: soil carbon effects
- Comparing soil quality and nematode communities in a long term (30 year) tillage study
- Controls on Nebraska SandHills stability and periodic instability

Outreach and Extension:

- Interagency information session on soil survey – hosted by UM and NRCS Jan. 2006 in St. Paul
- Hydric soils with lamellae workshop – hosted by UM for ISTS cooperators and other interested parties- Feb. 2006 in Duluth

Publications:
Peer-reviewed 8
Reports 1

Courses taught (titles):
Basic Soil Science, The Soil Resource, Field Study of Soils, Soil Judging, Soil Geography: Soil Variability on Planet Earth, Jr./Sr. Seminar, Environmental Impact Statements, Wetland soils, Soil Genesis and Landscape Relations, Colloquium in Soil Science- Field Tour of Minn., Forest Soils.

Nebraska

Academic Unit: School of Natural Resources University of Nebraska-Lincoln

Name: Mark Kuzila

Summary of Report: Update soil surveys have been published for Dunday, Gage, Hall, and Saunders counties. The updated Washington County soil survey is available on CD and the Kimball County Soil Survey is awaiting SSURGO certification. Soil survey update activities are under way in McPherson, Scotts Bluff, and Nance Counties as part of updates to MLRAs 65, 67, and 71. Soil surveys for all Nebraska Counties are available on the Web Soil Survey. Nebraska is making progress on a four digit numerical statewide legend that will be connotative to MLRA, landform, and soil series. We soon will start the actual map joining steps of improving digital line placement, joining soil survey delineations across political boundaries, and updating Official Series concepts.

Research Activities:

- Soil properties and the climate gradient across the Great Plains.
- Sand Hills Biocomplexity project: sandy soils and landscape stability
- Loess stratigraphy and soil/paleosol processes in eastern Nebraska.
- Beaver in Agricultural Watersheds: Potential for Mitigating Degraded Midwestern streams.
- OSL dating of dune deposits along the Platte and Elkhorn rivers
- Gypsum in subsoils of the saline wetlands soils.
- Surficial geologic mapping including research on Quaternary stratigraphy, landscapes and soils.

Publications:

Two peer-reviewed journal articles.

Joeckel, R.M., Ang Clement, B., and Van Fleet, L.R., 2005, Sulfate mineral crusts, pyrite weathering, and acid rock drainage in the Dakota Formation and Graneros Shale (Cretaceous), Jefferson County, Nebraska. Chemical Geology v. 215, p. 433-452.

Joeckel, R.M. and Ang Clement, B J., 2005, Soils, Surficial Geology, and Geomicrobiology of Saline-Sodic Wetlands, North Platte River Valley, Nebraska, USA. Catena v. 61, p. 63-101.

Courses Taught:

Soil Evaluation (Soil Judging)

Range Short Course

North Dakota

Academic Unit: Department of Soil Science; North Dakota State University

Name: Dr. David G. Hopkins

Summary of Report:
North Dakota is maintaining 10 field soil scientists that are working exclusively on soil survey in update and maintenance mode. There is one student soil scientist trainee this summer in the Devils Lake office. The reorganization of MLRA offices will result in only 4 offices for the state; Fargo, Dickinson, Devils Lake, and very likely Bismarck. The state NRCS staff continues to actively promote use of GIS and digital databases to facility soil survey update procedures and tasks. Preliminary results from the North Dakota Terrain Analysis Project involving Drs. David Franzen (NDSU) and Janis Boettinger (Utah State University) will be presented at the North Central Soil Survey Conference in Medora in late June, 2006. The NRCS staff is currently working on two DEM studies, one involving Lidar applications for Walsh County and the other applying IFSAR data to evaluate wetland biogeochemistry with ARS researchers from Mandan, ND. The NDAES has begun a 3 year water utilization/irrigation test study in the Devils Lake basin that includes several soils rated as conditionally irrigable. Results should be applicable for interpretations on soils having slight and moderate levels of salinity and can address, to some degree, short term sustainability. Several graduate students in the department are using GIS based approaches in their research which is having a beneficial effect on our productivity. Ongoing and new research topics should provide data and interpretations that will increase our understanding of the spatial distribution of soil properties in our North Dakota landscapes.

Research Activities:
CSREES project ND02356 "Influence of geologic materials and pedogenic processes on trace elements and salinity in soil landscapes" Principal Investigator, Dr. David Hopkins, Department of Soil Science

Devils Lake Basin Joint Water Resource Board: "Devils Lake Basin Water Utilization Test Project"; (3 year project, Principal Investigators: Dr. Dean Steele, Department of Agricultural and Biosystems Engineering, and Dr. David Hopkins, Department of Soil Science

NRCS Competitive Research Project- Application of Terrain Analysis to Soil Survey: Principal Investigator, Dr. David Franzen

Ducks Unlimited- Soil organic carbon investigations in Prairie Pothole Wetlands Principal Investigator, Dr. Larry Cihacek, begins July 1, 2006

Publications:
Amundson, T. A, and D. G. Hopkins. 2005 Establishing a baseline for soil organic carbon on the Glacial Ridge Restoration Project. Second International Water Conference, April 6-7th, Winnipeg, MB

Steele D. D. and D. G. Hopkins. 2005. Devils Lake Basin: A year of accomplishments. 42nd Annual Joint North Dakota Water Convention and Irrigation Expo. December 8th, Bismarck, ND
Doolittle J. A., B. Jenkinson, D. Hopkins, M.Ulmer, and W. Tuttle. 2006. Hydropedological investigations with ground-penetrating radar (GPR): Estimating water-table depths and local ground water flow pattern in areas of coarse-textured soils. Geoderma 131:317-329.

Courses taught (titles):
Soil 210- Introduction to Soil Science; Spring, 2005
Soils 444/644- Soil genesis and survey, Autumn, 2005

Ohio

Academic Unit: The Ohio State University and Ohio Agricultural Research and Development Center

Name: Neil E. Smeck

Summary of Report: A project to provide digital soils information for the entire state will be completed this year. The last of Ohio's 88 counties to receive a modern soil survey report was delivered in 2005. Whereas fieldwork for the updating of 10 counties has been completed, only one updated soil survey has been published to date. Updated USDA soil survey reports for the other nine counties are awaiting publication. Because most soil scientists in Ohio rarely encounter an adequate number of pedons in routine field work that have not been impacted by human activities to facilitate estimation of the magnitude of accelerated erosion due to the clearing of trees, tillage, and intensive grazing, an effort to collect morphological and laboratory data for pedons in undisturbed natural settings has been initiated to provide a reference database for such estimations.

Research Activities:
- Investigation of mineralogical characteristics of soils occurring in the K-rich region of NW Ohio and potential changes in class criteria for illitic family.
- Chemical and physical changes in minesoils twenty-five years after reclamation.
- Nutrient cycling in native and long-term no-till and conventionally tilled agroecosystems in well and poorly drained soils.
- Comparison of native and cultivated soils in order to differentiate steady state from dynamic (anthropogenically influenced) soil properties.

Outreach and Extension Development: Participate in development of annual work planning conferences and biennial soil scientists workshops for the Ohio Cooperative Soil Survey Program.

Publications:
- 2 peer-reviewed journal articles
- 3 abstracts

Courses taught:

- Introductory Soil Science Laboratory
- Soil Management
- Pedology
- Study Abroad Program in Dominican Republic

Oregon – No Report

South Dakota

Academic Unit: SD State University (SD Agricultural Experiment Station, Plant Science Dept.)

Name: Douglas D. Malo (0.75 FTE Teaching/0.25 FTE Research)
Douglas.Malo@sdstate.edu

Summary of Report:
SD has all been mapped and all counties have a published soil survey. Soil surveys updates (MLRAs 60A, 61, 62, 64, 65, and 102A) are being done by the SD Cooperative Soil Survey on a multi-county (MLRA) basis. The field work and manuscript for the Codington County soil survey were completed. Working on a project to convert hardcopy soil lab and morphology data to digital format. Fact sheets (technical soil property information) for benchmark soils are being developed. Assisting SD agencies in evaluating the feasibility of using Missouri River reservoir sediments for agricultural and other uses. Soil formation and properties are being evaluated in gold mine reclamation area.

Research Activities:

- Development of hydric soil properties under different temperature, time, and carbon levels
- Assisted with the SD Cooperative Soil Survey in Codington and Lawrence Counties.
- Characterized 250+ soil samples for research and NRCS soil survey use.
- Soil property and carbon sequestration changes due to grazing management practices in rangeland (42 pedons being characterized from Pennington County).
- Cooperative soil characterization and genesis study with NRCS in Black Hills area (MLRAs 62 and)
- Changes in surface soil test levels of P and K since 1950 (county and regional changes).
- Revising SD soil productivity index (PI) values (compare NASIS PI with Yield PI).
- Land management impacts on soil properties after 12 years of cultivation (corn and soybeans), cool season grasses, and warm season grasses.

- Hawaii (Maui) wetland soils reclamation project for endangered species (200 soil samples taken)

Publications (7/2005-6/2006): (List of publications available on request)
- 5 peer-reviewed journal articles and 1 teaching pamphlet
- 2 published abstracts
- 1 lab manual and 1 text for Introductory Soils
- 18 CDs (old deteriorating air photos [1939-1954] of SD)

Outreach and Extension Development:
- Work Planning Conference for the SD Cooperative Soil Survey
- Region 5 Collegiate Soil Judging Contest (Sturgis, SD)
- Training workshop for SD soil scientists
- Soil variability paper for zoning board decisions in Spink County
- Soil PI rating development and use workshop (county assessors and SD Dept of Revenue)

Grants (co-investigator) received (7/2005-6/2006):
- Gilt Edge Mine Reclamation – US EPA
- Chloride Injury from De-Icing Salts in Trees and Soils in the Black Hills of SD – SDDOT
- Cropping Systems Evaluation for Enhanced Crop Production – SD Crop Improvement.

Courses taught: Soils, Soil Judging, Integrated Natural Resource Management, Teaching Experience, Advanced Soil Genesis, Field Studies in Pedology, Undergraduate Research/Scholarship, Special Topics – Soils of CA, and Thesis

Wisconsin

Academic Unit: The University of Wisconsin - Madison

Name: Cynthia A. Stiles

Summary of Report: The initial survey for Wisconsin has been completed and has been completely digitized, certified and available on-line. This year (2006) has been proclaimed "The Year of Soil" by Governor Jim Doyle at the request of the NRCS and several affiliative agencies to celebrate this event. State office now anticipates budgetary cutbacks as field scientists are moved out west to continue once-over completions. Cooperative research tasks focus on development and refinement of digital mapping products, particularly special use and high resolution maps. The prime goal for this year has been establishing a statistically valid method for cross-evaluation of SoLIM which will involve intensive field work to assess the accuracy of soil maps produced with this technology. Personnel involved with on-going soil survey activities will be focused to three offices at Eau Claire, Rhinelander, and Juneau.

Research Activities:

- Quality assessment of predications of depth to the Rountree Formation predicted by SoLIM Over a Landscape Continuum
- Predictive mapping of phosphorus susceptibility in Driftless Area sub-soils using statistical datasets from observed landscape frameworks
- Geochemical survey of Wisconsin soils
- Pedological and biogeochemical properties of Rountree Formation sub-soils in the Driftless Area of southwestern Wisconsin
- Identifying high infiltration and groundwater recharge areas in Dane County, WI using NASIS information and GIS-based predictors
- Restoring native wet prairie vegetation in reed canary grass infested wetlands by using preferential soil property indices
- Paleopedology of PETM Paleo-Ultisols in western North Dakota – implications for present land use restrictions

Outreach and Extension Development:

- USDA- Natural Resources Conservation Services Research and Investigation Oversight Committee
- USDA-NRCS Advisory Panel to the Director
- National Academy of Sciences “Frontiers in Soil Science Research” participant
- NSF-Ecology Long Term Soil-Ecosystem Experimentation Advisory Board
- Bi-monthly work-plan development meetings for SoLIM Validation Project
- Reviewer for Western Region Cooperative Project

Publications: Peer-reviewed:2; symposia:2; reports: 1; abstracts: 5

Courses taught: Pedology, Soils of Wisconsin, Geological Evidence of Past Climate Change Seminar, Hydric Soils and Wetland Delineation Field Course.

ATTACHMENT 1
North Central Cooperative Soil Survey
Research Priorities Committee Report

Soil Research and Interpretations Survey
Academic Cooperators

A survey was conducted in May, 2006, to provide guidance for planning the direction and allocation of human resources for cooperative projects between the NRCS-Soil Survey Division, local, state and federal partners, and academic cooperators in the North Central Region. A nine question survey querying the cooperators on present conditions and future directions was sent out to the 13 representatives from each of the Land Grant Universities in the region on May 18 to provide two weeks time for completion. Deadline was extended from June 1 to June 12 to allow for late participation. Of the 13 requests, seven cooperators responded (54%). Response by faculty standing was as follows: Professor – 43% (3/7), Associate Professor – 50% (2/4), and Assistant Professor – 100% (2/2). The average number of years of experience for the group is 23.6. The following narrative is a synopsis of the responses.

The Future:

The Academic Cooperators felt that soil, water and air quality ranks as the highest societal need for which soil science and survey can provide salient information. Land use planning and food production followed in importance, with less easily visualized services such as contaminant mitigation and wildland preservation following far behind. The concept of sustainability was also raised as an important issue for society that is not easily seen but is required for societal health.

The cooperators felt that the hottest topic in soils-related research and information is population growth and loss of prime farmland. Responses were not overwhelmingly strong here, indicating that most felt that the topics were all worthy of some level of evaluation. Carbon sequestration was the lowest ranking of the five listed topics and one respondent mentioned food quality as being overlooked.

As for resources for the next generation of planners and natural resource managers that could be provided by soil scientists, digital maps were considered most important. Other materials were considered important, but to a lesser degree – each cooperator had their own preference and all ranked rather in the middle of the range. Educational websites were not considered to be as important as other digital or database-centered products.

The Present:

The Academic Cooperators felt most strongly about projects they are presently doing that they would like to continue. Land use assessments and field-based landscape investigations are considered to be the most important activities that should continue into the future. To a lesser degree, updating current soil information and interpretations were counted by half the participants as activities they plan to continue. There was no

definitive trend in issues that cooperators wished to discontinue or to start up, with each cooperator bringing individual needs to the table in these categories. There were more responses to starting up new activities than dropping undesirable ones, suggesting that cooperators might be willing to take on new tasks if resources were provided.

The most limiting component in participating in cooperative research projects is operating capital. This received a unanimous vote of most significant (5) from all respondents. The least limiting is lack of existing working partnerships or bad past experiences (hopefully no one has had any of the latter). It is apparent that we want to work towards moving forward and providing valid and useful products for the stakeholders, but we are all strapped for cash to do the job right. To some degree, administrative requirements and lack of personnel figures into equation, but not significantly. It is significant to note here that the junior faculty report that they lack knowledge of process by which they can initiate projects and that working partnerships are difficult to identify and establish.

Synopsis:

We have problems that we can focus on and we have the ability to do the work. We feel that issues of soil quality and the services provided by soil are important and require us to investigate in a meaningful fashion for future planning and sustainable resource management. We have the desire and the infrastructure to do this investigative work, but are generally lacking working capital and personnel to do a thorough job. Experienced personnel need to provide some framework for mentoring/assisting new faculty who strongly desire to work on cooperative projects with agencies. Responses from the survey show the individual nature of the needs across the region – not everyone has the same concerns in such a large area. But there are points upon which we can focus, including:1) Evaluation of soil system quality, 2) Assessing and predicting the impacts of population growth and pressure on natural resources, 3) Continued production and improvement of digital map products (on multiple scales) and improvement of user-friendly databases.

Tallied response means (red indicates highest significance scoring, blue indicates lowest significance rating; pink indicates notable significance scoring):

1. What would you anticipate as *important societal needs* for which Soil Science/Survey might provide research and information?

   A. Soil, water and air quality 4.43
   B. Land-use planning 4.00
   C. Contaminant mitigation 3.00
   D. Food production 3.71
   E. Wildland preservation 2.14

2. What would you anticipate as *"hot topics" in soils* related research and information in the next 5 to 10 years?

A. Soil-water relationships 3.57
B. Carbon sequestration 3.14
C. Population growth / loss of prime farmland 3.86
D. Waste disposal / contaminant mitigation 3.57
E. Urban land use and limitations 3.43

3. What soils-related products do you see as being *important resources* for the next generation of planners/ natural resource managers?
   A. Digital soil maps 4.14
   B. High-resolution specific-use soil maps 3.57
   C. User-friendly database with soil characterization information 3.29
   D. Linked water resource and soil properties database 3.29
   E. Informative educational web-sites 3.00

4. What issues/projects that you are presently involved with do you want to keep doing in the future?

5. What issues/projects are you doing now that you want to discontinue because you feel it is less important than other things you are doing or want to do in the future?

6. What new things do you want to begin that you find difficult to start with current obligations?

	Question Number		
Project/Issue	4	5	6
Soil taxonomy/Classification	2		
Land use assessments	6	1	
Bioremediation			1
Nutrient management planning		1	2
Watershed/Water quality evaluations	2		1
Ecological/Climate modeling	1	1	1
Farmland/Habitat preservation	1	1	1
Computer mapping/Modeling	3		1
Database development/Management	2	1	1
Regulatory functions		1	2
GIS applications	3		
Field-based landscape investigations	6		
Updating current soil information	4		1
Interpretations	4		
Community education-outreach	2	1	1

7. What currently *limits you* from starting or participating in a cooperative research project?
   A. Administrative requirements 2.85

B. Lack of operating capital 5.00
C. Lack of qualified personnel 2.43
D. Inadequate knowledge of process 2.29
E. Lack of existing working partnerships/bad past experience(s) 1.43

9. Job Title(s): Assistant Professor (2), Associate Professor (2), Professor (3)
Institutions: University of Illinois, Kansas State University, University of Minnesota, University of Missouri, North Dakota State University, Purdue University, University of Wisconsin
Mean years of experience: 23.6

Follow-up Activities:

This survey has sparked interest across the country as other academic participants found out about it. Thus, the survey as been passed on to Mike Golden at the National level for consideration for further decimation amongst NRCS personnel. The survey will also be forwarded to academic participants in the other regions (Northeastern, Southern, and Western), hoping to gather a larger pool of respondents for statistical evaluation.

A suggestion was made at the North Central Regional Cooperative Soil Survey Conference that the audience should be broadened to include other people working within soil science sub-fields related to soil survey. This would also broaden the response ranges and provide additional input that may not be obvious to the regular target audience. The need for input from stakeholders – those who benefit from the education of our students – is essential.