

**United Nations. Food and Agricultural Organisation (FAO). 1997. Land quality indicators and their use in sustainable agriculture and rural development, UN-FAO, Rome, Italy.**

The Title page states: "Proceedings of the Workshop organized by the Land and Water Development Division, FAO Agriculture Department and the Research, Extension and Training Division, FAO Sustainable Development Department, 25-26 January 1996; Paper prepared under the Land Quality Indicators (LQI) initiative." Sponsored by UN-FAO, UN Development Programme (UNDP), UN Environment Programme (UNEP), and the World Bank.

**United Nations. Food and Agricultural Organisation (FAO). 2003. Data sets, indicators and methods to assess land degradation in drylands ; Report of the LADA Email Conference 9 October - 4 November 2002, UN-FAO, Rome, Italy. From URL: <http://www.fao.org/ag/agl/agll/oldocsl.jsp>**

This report summarizes the findings of the e-mail conference that took place from 9 October to 4 November 2002 and which was organized by the Land Degradation Assessment in Drylands (LADA) project. The report contains exchanges of views on data sets and methods that may be used to assess land degradation and a discussion on the biophysical, socio-economic and institutional indicators that explain the root causes, driving forces, status, impact and responses to land degradation at various scales.

**United Nations. Food and Agricultural Organisation (FAO). 2003. Use of indicators in sustainable agriculture and rural development / Tschirley, Jeff. UN-FAO FAO Research, Extension and Training Division. Rome, Italy. From URL: <http://www.fao.org/sd/epdirect/epan0001.htm>**

**Institutional indicators**

Although indicators of sustainable development pose an enormous challenge to develop, there are a number of entry points to begin work. For example, the governments of most countries already influence land use through their agriculture, forestry and fisheries policies and planning processes; they use various kinds of information to arrive at their decisions. But, traditional environmental indicators that focus on the use of pesticides and fertilizers, crop productivity, land conservation and so on, ignore human and institutional performance even though it is often the critical factor in success.

--From web site at URL: <http://www.fao.org/sd/epdirect/epan0001.htm>

**United States Department of Agriculture, Natural Resources Conservation Service (NRCS). 2003. Soil Conditioning Index for cropland management systems. USDA-NRCS; at URL: [http://soils.usda.gov/sqi/soil\\_quality/land\\_management/sci.html](http://soils.usda.gov/sqi/soil_quality/land_management/sci.html) and [ftp://ftp.nssc.nrcs.usda.gov/pub/agronomy/scifiles/latest\\_revisions](ftp://ftp.nssc.nrcs.usda.gov/pub/agronomy/scifiles/latest_revisions)**

A tool to rate trend in SOM, in consideration with cropping systems and tillage practices; field scale; dynamic; reliable (Microsoft Excel spreadsheet products); part of standards of practice/best practices. Evolving; used 2-3 years; is incorporating soil databases in 2003 for modelling purposes. [See web page summary for details.]

**United States Department of Agriculture, Technical Soil Services. 2000. Technical Soil Services [handbook]. From URL: <http://soils.usda.gov/procedures/handbook/content/608ex7.txt>**

**["indices" search results:]**

NSSH Part 621 (Exhibits 1-5) | NRCS Soils

<http://soils.usda.gov/technical/handbook/contents/part621p2.html>

NSSH Part 622 (Exhibit 2) | NRCS Soils

<http://soils.usda.gov/technical/handbook/contents/part622p2.html>

Soil Quality Assessment | NRCS SQ

at URL: [http://soils.usda.gov/sqi/soil\\_quality/assessment/](http://soils.usda.gov/sqi/soil_quality/assessment/)

NSSH Part 608 (Exhibits 2-7) | NRCS Soils

<http://soils.usda.gov/technical/handbook/contents/part608p3.html>

NSSH Part 621 (00-11) | NRCS Soils

at URL: <http://soils.usda.gov/technical/handbook/contents/part621.html>

Soil Quality Concept Articles | NRCS SQ

[http://soils.usda.gov/sqi/soil\\_quality/what\\_is/sqconcept.html](http://soils.usda.gov/sqi/soil_quality/what_is/sqconcept.html)

NSSH Part 601 | NRCS Soils

<http://soils.usda.gov/technical/handbook/contents/part601.html>

NSSH Part 614 (Exhibit 2) | NRCS Soils

<http://soils.usda.gov/technical/handbook/contents/part614p2.html>

**Examples:**

NSSH Part 608 (Exhibits 2-7) | NRCS Soils

Workload Analysis -- Annual Plan of Operations (Exhibit 608-2)

INTERPRETATIONS [form] -- includes:

"In a narrative, describe: What soil performance data (e.g. crop yields, site **indices**) are collected and how?"

--From URL: <http://soils.usda.gov/procedures/handbook/content/608ex7.txt>

NSSH Part 622 (Exhibit 2) Ecological and Interpretative Groups (Part 622) Land Capability Classification (Agriculture Handbook 210) (Exhibit 622-2). CONTENTS includes:

"Soil-woodland **site index** correlations are essential for interpreting the potential wood production of the individual soil units that are mapped. Woodland-site indices are commonly developed for individual kinds of soils. Soil-mapping units can be placed in woodland groupings according to **site indices** for adapted species and other responses and limitations significant to woodland conservation. Such groupings do not necessarily parallel those for capability units or range sites; however, in some areas capability units may be grouped into range sites and woodland-suitability groups."

--From: [soils.usda.gov/procedures/handbook/content/622-ex2.htm](http://soils.usda.gov/procedures/handbook/content/622-ex2.htm) --Online excerpts.

**United States Department of Agriculture (USDA). National Soil Survey Center. 1996. Indicators for soil quality evaluation. *USDA Soil Quality Information Sheet*, Apr 1996: 2pp. From URL: <http://soils.usda.gov/sqi> and <http://www.ftw.nrcs.usda.gov/> "Prepared by the National Soil Survey Center in cooperation with the Soil Quality Institute, NRCS, USDA, and the National Soil Tilth Laboratory, Agricultural Research Service, USDA."**

**United States Department of Agriculture (USDA). Natural Resources Conservation Service. 2001. Rangeland soil quality—Indicators for assessment and monitoring. *USDA Soil Quality Information Sheet: Rangeland Sheet no.2*, May 2001; 2pp. From URL: <http://soils.usda.gov/sqi> and <http://www.ftw.nrcs.usda.gov/glti>**

**United States Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS). 2001. *Guidelines for soil quality assessment in conservation planning*. From URLs: [http://policy.nrcs.usda.gov/scripts/lpsiis.dll/TN/TN\\_SOI\\_1\\_1.htm](http://policy.nrcs.usda.gov/scripts/lpsiis.dll/TN/TN_SOI_1_1.htm) and <http://www.statlab.iastate.edu/survey/SQI/catalog.html>**

The publication provides guidelines for assessing soil quality in the context of the nine-step conservation planning process. It compliments the material taught in the National Employee Development Center (NEDC) course, "Soil Quality Assessment and Application for Field Staffs." It also illustrates the practical use of tools and information developed by the Soil Quality Institute and provides information relating specific practices in the Field Office Technical Guide to solving soil quality problems. The information is primarily intended for use in the planning process, but can also aid with conducting informal soil quality assessments, or as an educational resource for teaching about soil quality. The guide is intended for as wide an audience as possible. --Accessed Sept.09.03,clh.

**United States. National Soil Tilth Laboratory. 2000. Soil quality information sheets. USDA-NRCS. From URLs: <http://www.nstl.gov/pubs/reprintlist.html> ; <http://library.ncsu.edu/MARION/ANA-9776>**

**United States. Natural Resources Conservation Service, Soil Quality Institute. 1996. *The Soil quality concept booklet*. From URL: [http://soils.usda.gov/sqi/soil\\_quality/what\\_is/sqconcept.html](http://soils.usda.gov/sqi/soil_quality/what_is/sqconcept.html)**

**The Soil Quality Concept Booklet** is a set of reprints compiled by the NRCS Soil Quality Institute in 1996. Preface: Eight key papers on soil quality (as judged by the Soil Quality Institute staff) were selected for inclusion in this volume. The authors of the papers present the concept of soil quality from several different perspectives:

Aldo Leopold (1933), as a forester with the US Forest Service, was one of the first to envision conservation of the land. He discusses the fundamental concept of conservation and provides the theoretical foundation for the concept of soil quality.

Larson and Pierce (1991) were the first to write a comprehensive paper on soil quality that established the theory and concepts on which soil quality is currently based.

Karlen et al. (1997) describe the background and development of the concepts of soil quality and discuss the theoretical reasoning and rationale for its existence in soil science. They also provide the current thinking on the definition and vital functions of a soil.

Warkentin (1995) focuses on soil functions, describing them from an ecological perspective. Soil function is a major conceptual component in understanding and assessing soil quality.

Seybold et al. (1997) reviewed the literature on the concepts of soil quality, soil quality indicators and indices, and issues of scale. They also present a theoretical framework for assessing soil quality.

Kennedy and Papendick (1995) give a good overview of the soil biological component of soil quality. Soil biology has not been emphasized in the past because of its dynamic nature, but it is a major driving force behind the soil quality concept.

Parr et al. (1992) discuss the relationship between soil quality and sustainability in agricultural systems, and the need for a soil quality index and monitoring programs at national and global scales.

Doran et al. (1994) apply the concept of soil quality to real situations, and provide some strategies for maintaining or enhancing the quality of soils in agricultural systems.

Leopold, Aldo. 1933. The Conservation Ethic. *J. Forestry* 31:634-647.

Larson, W.E. and F.J. Pierce. 1991. Conservation and Enhancement of Soil Quality. In: *Evaluation for Sustainable Land Management in the Developing World*. P. 175-203. Int. Board for Soil Res. and Management, Bangkok, Thailand.

Karlen, D.L., M.J. Mausbach, J.W. Doran, R.G. Cline, R.F. Harris, and G.E. Schuman. 1997. Soil Quality: A Concept, Definition, and Framework for Evaluation. *Soil Sci. Soc. Am. J.* 61(1):4-10.

Warkentin, B.P. 1995. The Changing Concept of Soil Quality. *J. Soil Water Cons.* 50:226-8.

Seybold, C.A., M.J. Mausbach, D.L. Karlen, and H.H. Rogers. 1997. Quantification of Soil Quality. In: B.A. Stewart and R. Lal (eds.) *Advances in Agronomy*. Proceedings from an International Symposium on Carbon Sequestration in Soil. Lewis Publishers.

Kennedy, A.C. and R.I. Papendick. 1995. Microbial Characteristics of Soil Quality. *J. Soil Water Cons.* 50:243-8.

Parr, J.F., R.I. Papendick, S.B. Hornick, and R.E. Meyer. 1992. Soil Quality: Attributes and Relationship to Alternative and Sustainable Agriculture. *Am. J. Altern. Agric.* 7:5-11.

Doran, J.W., M. Sarrantonio, and R. Janke. 1994. Strategies to Promote Soil Quality and Health. In: C.E. Pankhurst, B.M. Doube, V.V.S.R. Gupta, and P.R. Grace (eds.) *Soil Biota: Management in Sustainable Farming Systems*. P. 230-237. CSIRO, Australia.

### **University of Illinois at Urbana-Champaign. ACES. 2000? Illinois participatory research programs.**

**University of Illinois. From URL: <http://www.aces.uiuc.edu/~IPRP/illinois1.html>**

**Agro-Ecology/Sustainable Agriculture Program** -- The sustainable agriculture program at the University of Illinois, College of Agricultural, Consumer and Environmental Sciences.

**Illinois Soil Quality Initiative** -- ISQI participants include individual farmers and various organizations and associations who are working together to identify **soil quality indices** farmers can use to make decisions about their own stewardship goals.

**Partnership Illinois** -- A new initiative at the University of Illinois at Urbana-Champaign, designed to coordinate public service and outreach efforts, increase their impact, and create new opportunities to serve the state.

**On-Farm Research @ UIUC** -- Participatory on-farm research projects conducted by farmer-cooperators have addressed primarily nitrogen fertilizer reduction in corn, reduced herbicide use, and tillage and rotation systems and their impact on soil tilth and root growth.

--From web site at URL: <http://www.aces.uiuc.edu/~IPRP/illinois1.html> -- MSN online abstract.

### **University of Illinois at Urbana-Champaign. Department of Natural Resources and Environmental Sciences (NRES). 1998. Illinois Soil Quality Initiative (ISQI).**

**University of Illinois. From URLs: <http://www.ag.uiuc.edu/~vista/> ;**

**<http://www.agr.state.il.us/C2000/fy98/97-62.html> ; [www.agr.state.il.us/C2000/fy97/96-40.html](http://www.agr.state.il.us/C2000/fy97/96-40.html) ; [http://web.aces.uiuc.edu/vista/pdf\\_pubs/ISQI97.PDF](http://web.aces.uiuc.edu/vista/pdf_pubs/ISQI97.PDF)**