

APPENDIX IV: ANNOTATED BIBLIOGRAPHY

Only a sample of key publications and websites on land degradation is given here. These are the sources most useful to support the ideas and practical challenges in these *Guidelines* and to accompany training courses in field assessment techniques.

Reading on Land Degradation

Blaikie, P. & Brookfield, H.C., 1987. *Land Degradation and Society*. Methuen, London, UK.

- Still the standard text looking at land degradation from a non-technical perspective.

Brookfield, H. (ed.) 1995. Special Issue: United Nations University Collaborative Research Programme on People, Land Management and Environmental Change. *Global Environmental Change* 5(4): 263-393

- This volume contains important PLEC papers, many of which relate to environmental change, such as land degradation. Look especially at Gyasi *et al*, pp.355-366 on production pressures in the forest-savanna of Ghana, which provides evidence that farmers are affected by and trying to adapt to environmental change. Also, Kiome and Stocking, pp.281-296, adopt a farmer-perspective to analysing the responses of farmers to erosion and conservation in semi-arid Kenya.

Lal, R., Blum, W.H., Valentine, C. and Stewart, B.A., (eds) 1997, *Methods for Assessment of Soil Degradation*, CRC Press, Boca Raton, USA.

- This is the latest standard reference on scientific and experimental approaches to soil degradation assessment. It will appeal more to researchers than to field workers, and to those with access to soil analytical laboratories.

Oldeman, L.R., Hakkeling, R.T.A. and Sombroek, W.G., 1990. *World Map of the Status of Human-Induced Soil Degradation*. Explanatory Note and World Map at 1:10 million. International Soil Reference and Information Centre, Wageningen, and UNEP, Nairobi

- This is the much-quoted GLASOD exercise, which attempts to depict soil degradation types world-wide and give global estimates of status. Remember that assessments are based almost wholly on 'expert' judgement, and certainly not on specific field indicators. Yet, this publication is highly influential in publicising the critical status of soil and land degradation.

Scherr, S & Yadav, S., 1996. *Land Degradation in the Developing World: Implications for Food, Agriculture, and the Environment to 2020*. Food, Agriculture and Environment Discussion Paper 14, International Food Policy Research Institute, Washington DC, USA. [Abstract available on-line from IFPRI at <http://www.ifpri.org/index1.htm>]

- This was one of the first technical publications to present land degradation as a phenomenon which is not only spatially differentiated, but also an ambivalent factor in food production.

Young, A. 1994. *Land Degradation in South Asia: Its Severity, Causes and Effects upon the People*. World Soil Resource Reports, United Nations Food and Agriculture Organization, Rome, Italy. [Available free on-line at <http://www.fao.org/docrep/V4360E/V4360E00.htm#Contents>]

- This is one of the most thorough regional assessments of land degradation, but from a largely technical perspective.

Reading on Economic Analysis

Clark, R., 1996, *Methodologies for the Economic Analysis of Soil Erosion and Conservation*, CSERGE Working Paper, UEA, Norwich, UK.

- An excellent review of many methodologies for economic analysis in the context of land degradation.

Dent, D. and Young, A. T., 1981. *Soil Survey and Land Evaluation*. George Allen & Unwin, London, UK.

- Chapter 11, 'The Economics of Land Evaluation', provides useful guidance on how to apply cost-benefit analysis, with clear tabulations of data and discounting.

Enters, T., 1998. A Framework for the Economic Assessment of Soil Erosion and Conservation, in Penning de Vries, F.W.T., Angus, F., and Kerr, J., (eds), *Soil Erosion at Multiple Scales: Principles and Methods for Assessing Causes and Impacts*. CAB International, Oxford, UK.
- Useful paper on cost-benefit analysis, which advocates a participatory approach in order to best reflect the situation of the decision-maker.

Gittinger, J.P., 1982. *Economic Analysis of Agricultural Projects, 2nd Edition*. The John Hopkins University Press, Baltimore, USA.
- This is the classic text on how to undertake economic analysis, including detailed guidance on cost-benefit analysis of agricultural technologies.

Reading on Farmer Perspective

Dejene, A., Shishira, E. K., Yanda, P. Z. & Johnsen, F.H., 1997. *Land Degradation in Tanzania: Perception from the Village*. World Bank Technical Paper No. 370, Washington DC [Cost US\$22 from World Bank Publications. Abstract on-line at <http://www.worldbank.org/html/extpb/abshtml/13993.htm>].
- A good example of determination of farmer-perspective. The following is taken from the Abstract: "Local land users and officials often have conflicting perceptions of and responses to land degradation issues. This causes problems for officials in diagnosing and addressing the issue and is a major constraint on the successful implementation of policies and projects to address land degradation. This study looks at the perception and response gap between officials and land users in the diagnosis and remedy of land degradation. It also examines the dynamics of the loss of soil fertility and low productivity at the village level...."

FAO, 2000. *Guidelines and Reference Material on Integrated Soil and Nutrient Management and Conservation for Farmer Field Schools*. Food and Agriculture Organisation of the United Nations, Rome, Italy.
- This publication describes the Farmer Field School Approach, advocated by FAO. Although the focus is on training farmers in farm management, farmers are central to the programme. They 'learn-by-doing', facilitated by extension workers, in a field setting.

Reading on Sustainable Rural Livelihoods Approach

Carney, D. (editor), 1998. *Sustainable Rural Livelihoods: What contribution can we make?* Department for International Development, London, UK.
- This book brings together a selection of papers that outline DfID's approach to sustainable rural livelihoods and links this focus to the aim of the elimination of poverty.

Ellis, F., 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press, Oxford, UK.
- This book looks at the application of the sustainable rural livelihoods framework to developing countries.

Scoones, I., 1998. *Sustainable Rural Livelihoods: A Framework for Analysis*. Working Paper No.72, Institute of Development Studies, Brighton, UK. [Available free from the Institute of Development Studies on-line at <http://server.ntd.co.uk/ids/bookshop/details.asp?id=419>.]
- One of a stream of publications now coming out on the SRL approach and how to put it into practice. This approach will undoubtedly be driving the development agenda for the next decade – see Chapter 3 of these Guidelines.

Reading on Participatory Rural Approaches

IIED, 1995-present, *PLA Notes – Notes on Participatory Learning and Action*, International Institute for Environment and Development, Sustainable Agriculture Programme, London, UK.
- Excellent series of case studies and guidance notes on conducting rural surveys.

Nabasa, J., Rutwara, G., Walker, F., and Were, C., 1995, *Participatory Rural Appraisal: Practical Experiences*, Natural Resources Institute, Chatham, UK.
- This booklet provides guidance on how to conduct PRA, with some good case studies illustrating how different techniques can be employed.

Partners for Development, 1999, *Field Manual for Participatory Rural Appraisal (PRA)*, Partners for Development, Washington DC, USA.

- The Annex to this manual is particularly useful as it includes step by step guidance on how to perform different PRA techniques.

Reading on Indicators of Soil Loss

- Douglas, M.G., Mughogho, S.K., Shaxson, T.F. and Evers, G., 1999. *Malawi: An Investigation into the Presence of a Cultivation Hoe Pan under Smallholder Farming Conditions*. TCI Occasional Paper Series No. 10, Food and Agriculture Organisation of the United Nations, Rome, Italy.
- This booklet gives a clear account of the investigation into hoe pan in Malawi and suggests ways in which this problem can be tackled.
- Herweg, K., 1996. *Field Manual for Assessment of Current Erosion Damage*. Soil Conservation Research Programme, Ethiopia, and Centre for Development and Environment, University of Berne, Switzerland.
- Unfortunately not widely available, this little book is the closest in conception and design to these Guidelines. It takes erosion assessment in a more rigidly 'scientific' way and does not specifically address farmers' issues. But it is worth perusing for a more standard approach to field assessment of erosion processes.
- Herweg, K., Steiner, K. and Slaats, J., 1999. *Sustainable Land Management- Guidelines for Impact Monitoring, Volume 1: Workbook and Volume 2: Toolkit*. Centre for Development and Environment, University of Berne, Switzerland.
- These two books describe how to monitor the impact of development projects on sustainable land management and provide details on a number of different tools that can be used to measure impact. Some of these tools are well-suited to the field assessment of land degradation and complement the techniques considered in these Guidelines.
- Humphreys, G.S. and Macris, J.L., 2000 Some notes on determining soil loss from exposed tree roots. *PLEC Project Report*. (Unpublished notes available from the first-named author.)
- These notes provide useful lists of tropical and sub-tropical trees that display annual and twice annual tree rings.
- Lal, R. (editor), 1994. *Soil Erosion Research Methods*. 2nd Ed. Soil and Water Conservation Society, Ankeny, Iowa.
- A useful book of rather standard approaches to measurement and assessment. The Cover Model mentioned in Chapter 7 in these Guidelines is dealt with on pp 210-232 under "Assessing Vegetative Cover and Management Effects."
- Landon, J.R. (editor) 1984. *Booker Tropical Soil Manual: A handbook for soil survey and agricultural land evaluation in the tropics and subtropics*, Booker Agriculture International Limited, London.
- A valuable reference book giving information on soil characteristics and classification. It also gives guidelines on the suitability of soils for major tropical crops.
- Stocking, M.A. and Clark, R., 1999. 'Soil productivity and erosion: biophysical and farmer-perspective assessment for hillslopes'. *Mountain Research and Development* 19(3): 191-202.
- This paper describes a number of field techniques for erosion rate and impact assessment. Some examples in these Guidelines are drawn from this source. It contains a comprehensive reference list.

Reading on Soil Loss Estimation Models

- Elwell, H.A. and Stocking, M., 1982. 'Developing a simple yet practical method of soil loss estimation'. *Tropical Agriculture* 59: 43-48.
- This paper describes the SLEMSA model, and shows a worked application for smallholder farming in Zimbabwe.
- Morgan, R.P.C., 1995. *Soil Erosion & Conservation*, 2nd Edition, Longman Group Limited, London.
- See Chapter 4 for discussion of Erosion Hazard Assessment.
- Renard, K.G., Foster, G.R, Weesies, G.A, McCool, D.K. and Yoder, D.C., 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE). *Agricultural Handbook 703*, Agricultural Research Service, United States Department of Agriculture, Washington DC, USA.
- This publication provides guidance on the use of the Revised Universal Soil Loss Equation and, as such, is an update on the classic text (Wischmeier & Smith noted below).
- Stocking, M. and Peake, L., 1986. 'Crop yield losses from the erosion of Alfisols'. *Tropical Agriculture* 63(1): 41-45.

- This paper brings together the evidence for yield decline with erosion, illustrating it by a simple model of soil productivity.

Wischmeier, W.H. and Smith, D.D. 1965. Predicting rainfall erosion losses from cropland east of the Rocky Mountains. *Agricultural Handbook 282*, Agricultural Research Service, United States Department of Agriculture, Washington DC, USA.

- This is the classic booklet on the design, operation and statistical basis of the Universal Soil Loss Equation.

Reading on Land Quality Indicators and Nutrient Deficiencies

Havlin, J.L., 1999, *Soil Fertility and Fertilizers: An introduction to nutrient management*, Prentice-Hall, London, UK.

- This book provides clear information on nutrient deficiencies and other factors that affect soil quality.

Hilhorst, T. and Muchena, F. (editors), 2000. *Nutrients on the Move: Soil Fertility Dynamics in African Farming Systems*. Drylands Programme, International Institute for Environment and Development, London, UK.

- This little book makes the case for a gradual decline in nutrient and organic matter status of African farming systems and then shows from a farmer perspective how farmers are coping and, sometimes, reversing the situation. Excellent insights into farmers' practices.

UN/FAO 1997. *Land Quality Indicators and Their Use in Sustainable Agriculture and Rural Development*. FAO Land and Water Bulletin 5, co-published with World Bank, UNEP and UNDP, Rome, Italy.

- A thorough review of recent efforts to develop indicators of land quality. Unfortunately, most authors in this FAO paper adopt a standard 'scientific' approach – but it makes a good contrast to farmer-first perspectives.

Reading on Plant Analysis

Wallace, T., 1961, *The Diagnosis of Mineral Deficiencies in Plants by Visual Symptoms: A Colour Atlas and Guide*, Her Majesty's Stationery Office, London, UK.

- Although a little old, this publication provides useful guidance on how to test for nutrient deficiencies by selecting the appropriate acid/reagent.

Reading on Consequences of Land Degradation for Land Users

Douglas, M. 1997. *Guidelines for the Monitoring and Evaluation of Better Land Husbandry*. Booklet published by the Association for Better Land Husbandry [Contact T.F. Shaxson, Chairman, ABLH, Greensbridge, Sackville Street, Winterbourne Kingston, Dorset DT11 9BJ, UK]

- This booklet proposes and gives examples of grading mechanisms for use in evaluating the seriousness of land degradation.

Nabhan, H., Mashali, A.M. & Mermut, A.R. (editors) 1999. *Integrated Soil Management for Sustainable Agriculture and Food Security in Southern and East Africa*. Land and Water Development Division Publication AGL/MISC/23/99, United Nations Food and Agriculture Organization, Rome, Italy. [Available from FAO Publications].

- See especially pages 91-120, by Stocking and Tengberg, where erosion-induced loss in soil productivity is shown to impact on agricultural production and food security. Land degradation outcomes in Chapter 7 come from this publication.

Tengberg, A., da Veiga, M., Dechen, S.C.F. & Stocking, M., 1998. 'Modelling the impact of erosion on soil productivity: a comparative evaluation of approaches on data from southern Brazil'. *Experimental Agriculture* 34: 55-71.

- This paper demonstrates a number of techniques and approaches of presenting erosion-productivity data. The modelling described is intended to provide planners and policy-makers with predictions as to the sustainability of soil resources.

Reading on Potential Benefits of Conservation

- Hurni, H., 1986. *Guidelines for Development Agents on Soil Conservation in Ethiopia*, Community Forests and Soil Conservation Development Department, Ministry of Agriculture, Ethiopia.
– This small book deals specifically with conditions in Ethiopia, but it gives useful summaries of several conservation measures and describes the types of landscape to which they are most suited.
- Reij, C., Scoones, I & Toulmin, C., 1996. *Sustaining the Soil: Indigenous Soil and Water Conservation in Africa*. Earthscan, London, UK.
– An excellent collection of case studies, demonstrating farmers' rationale in undertaking soil and water conservation.

Websites:

- <http://www.cde.unibe.ch/programmes/global/glo20.html> This is WOCAT – the World Overview of Conservation Approaches and Technologies, which includes a comprehensive database of conservation techniques from many developing countries. A CD-ROM is also available from the project's co-ordinators at the University of Berne. It is relevant for these *Guidelines* in that WOCAT shows the factors and variables important to farmers in determining whether or not to invest in land rehabilitation.
- <http://www.fao.org/WAICENT/FAOINFO/AGRICULT/agl/agll/oldocsl.asp> A useful page on the FAO website giving on-line documents on 'Land', including several of the older FAO Soils Bulletins, such as *Framework for Land Evaluation*, which could be useful in making assessments of the potential for land degradation.
- <http://www.ids.ac.uk/blids> The British Library for Development Studies, based at the Institute for Development Studies, Sussex. The library catalogue allows free access to many useful publications, especially in the field of Sustainable Rural Livelihoods.
- <http://www.unccd.int/main.php> This is the main web-site of the United Nations Secretariat of the Convention to Combat Desertification (CCD). The CCD has the mandate for 'desertification' which they define as land degradation in dryland areas. It is a new site and is expanding to include lists of related web-sites, including national inventories of desertification.
- <http://www.unu.edu/env/plec> This is the project web-site of *People, Land Management and Environmental Change (PLEC)*. PLEC works on demonstration sites in 12 tropical countries, where local people manage their land in such a way as to preserve a large amount of biodiversity. Part of the way they do this is to manage land in sensitive ways without it becoming degraded. The web-site contains a number of downloadable publications from PLEC that address field assessment of agricultural biodiversity. PLEC includes land rehabilitation and conservation assessment under the overall heading of 'agrodiversity'.