

## SOIL AND SUSTAINABILITY

### BACKGROUND LITERATURE

**Compiled by M.C. Laker, Retired Professor of Soil Science, Pretoria**

**Note:** The literature listed here, are mainly review papers with numerous relevant references. In brackets the main information available from some is given.

Aucamp, P. 2000. Trace element pollution of soils by abandoned gold mine tailings near Potchefstroom, South Africa. M.Sc. dissertation, Univ. Pretoria. (Example of continuing heavy metal pollution of surrounding soils 60 years after a gold mine has been abandoned. Results on factors affecting mobility of pollutants in soils.)

Barnard, R.O., Van der Merwe, A.J., De Villiers, M.C., Van der Merwe, G.M.E & Mulibana, N.E. 2000. Problem soils, including degraded soils: Extent, present use, management and rehabilitation in South Africa. Proc. FAO/ISCW Expert Consultation on Management of Degraded Soils in Southern and East Africa (MADS-SEA), 126-140.

CSIR Environmental Services 1992. Building the foundation for sustainable development in South Africa. South Africa's National Report to the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro. Dept. Environment Affairs, Pretoria. 268 pp. (Including reference to the challenges that a change of regime would bring. Summary of the ANC's policy on the environment. Comprehensive discussion on the status of South Africa's resources.)

Laker, M.C. 1995. Comments on the act on the subdivision of agricultural land. Invited written and oral submission to workshop of the Protocol Committee at Parliament, Cape Town.

Laker, M.C. 1997. Understanding that in the process of land reform, rural upliftment and restructuring, South Africa must ensure the sustainability of our natural resources. Unpublished invited paper presented at Agritech '97 Conference, Johannesburg.

Laker, M.C. 2004. Advances in soil erosion, soil conservation, land suitability evaluation and land use planning research in South Africa, 1978-2003. S.Afr. J. Plant & Soil 21, 345-368.

Laker, M.C. 2004. Challenges to soil fertility management in the "Third Major Soil Region of the World", with special reference to South Africa. Unpublished invited paper presented at 15<sup>th</sup> International Symp. of Fertilizers, Pretoria. (Trends in soil acidity and plant nutrient levels in South Africa over the last 20 years.)

Laker, M.C. 2004. Development of a general strategy for optimizing the efficient use of primary water resources for effective alleviation of rural poverty. WRC Report No.

- KV149/04. Water Research Commission, Pretoria. 208 pp. (Comprehensive invited report on optimizing the efficient use of water and soil resources in South Africa. Proposals regarding education and training, research, extension. Emphasis on sustainable resource use. Discussion on the impacts of the present land reform programme on the efficient use of soil and water and sustainability.)
- Laker, M.C. 2005. The global impact of zinc micro nutrient deficiencies. Invited paper presented at micro nutrient symposium, Mt. Edgecombe. (Geomedical discussion on zinc in human health – important for infant brain development, maintenance of the human immune system, etc. Reference to zinc deficiency “crisis areas” in traditional rural areas in South Africa.)
- Laker, M.C. 2005. Appropriate plant nutrient management for sustainable agriculture in Southern Africa. *Communications in Soil Science and Plant Analysis* 36, 89-106. (Overview of cropping potential and appropriate soil fertility management for different situations in Southern Africa.)
- Laker, M.C. In Press. Urban soils. Invited chapter in UNESCO’s *Encyclopedia of Life Support Systems*. (Overview of the effects of urban development on soils.)
- Laker, M.C., Beyers, C.P. de L., Van Rensburg, S.J. & Hensley, M. 1983. Environmental associations with oesophageal cancer: An integrated model. *Proc. 10<sup>th</sup> Nat. Congr. Soil Sci. Soc. S.Afr. East London, 1981. Techn. Comm. No. 180, Dept. Agric. pp. 81-90.* (Discussion on possible relationships between trace element – especially manganese - deficiencies in soils and oesophageal cancer incidence in rural areas. Mention of role of soil erosion.)
- Mills, A.J. & Fey, M.V. 2004. Declining soil quality in South Africa: Effects of land use on soil organic matter and surface crusting. *S.Afr. J. Plant & Soil* 21, 388-398.
- Schoeman, J.L. & Van Deventer, P.W. 2004. Soils and the environment: The past 25 years. *S.Afr. J. Plant & Soil* 21, 369-387. (Overview of environmental impacts - including pollution – on South African soils due to agriculture, forestry and deforestation, mining, industries, urbanization, etc.)
- Van der Merwe, A.J. 1995. The basis for sustainable growth and development in South Africa. *Proc. ARC-ISCW Wise Land Use Symposium*, 2-8. (Brief overview of South Africa’s agricultural potential and soil degradation.)
- Van der Merwe, A.J., De Villiers, M.C., Barnard, R.O., Beukes, D.J., Laker, M.C. & Berry, W.A.J. 2000. Technical report on guidelines on the management and rehabilitation of acid and fertility declined soils in South Africa. *Proc. FAO/ISCW Expert Consultation on Management of Degraded Soils in Southern and East Africa (MADS-SEA)*, 141-171.

Weaver, A.v.B. 1989. Soil erosion rates in the Roxeni basin, Ciskei. S.Afr. Geogr. J. 71, 32-37. (Indicating that soil erosion can be over 100 t per ha in a catchment in an area where the average rate for the region is indicated as 6 t per ha.)