Land Degradation

TI: Land Quality as an Input to Production: The Case of Land Degradation and Agricultural Output
AU: Walpole,-Sandra; Sinden,-Jack; Yapp,-Tim
SO: Economic-Analysis-and-Policy; 26(2), September 1996, pages 185-207.
AB: Land is a traditional input to production, and the influence of both land area and land quality on economic scarcity have long been the subject of debate. Analysis of the role of land quantity on output has involved classic applications of the production function. But analysis of the role of land quality and land characteristics is more recent and has proved less straight forward. Analysis of the effects of land degradation on agricultural output is an example of the problem. In this paper a general approach to analysis of the effect of changes in land quality is developed, tested and applied to land degradation. The approach provides insights on whether output falls as degradation increases and by how much, and the output effects of treatment. This sort of information, from this general approach, enables the analyst to raise issues for policy, question existing policies, and suggest broad priorities for investment.

TI: Land Degradation and Property Regimes
AU: Beaumont,-Paul-M.; Walker,-Robert-T.
SO: Ecological-Economics; 18(1), July 1996, pages 55-66.
AB: This paper addresses the relationship between property regimes and land degradation outcomes, in the context of peasant agriculture. We consider explicitly whether private property provides for superior soil resource conservation, as compared to common property and open access. To assess this we implement optimization algorithms on a supercomputer to address resource decision-making of individual households. We find that conditions exist under which private property does not lead to the best environmental outcome. Access to farming technology and off-farm employment opportunities are key factors in this result.

TI: The Costs of Land Degradation in Sub-Saharan Africa
AU: Bojo,-Jan
SO: Ecological-Economics; 16(2), February 1996, pages 161-73.
AB: The overriding question that this article addresses is: What are the immediate and future costs of land degradation for a nation? The objectives of the analysis are to find appropriate measures to express the national level costs of land degradation, and suitable methods to estimate such measures. Furthermore, the aim is to document and interpret the results of existing studies. To meet these objectives, a set of 12 studies from Sub-Saharan Africa (SSA) is reviewed, using a consistent, cross-study analytical framework derived from the objectives above. With regard to measures of the cost of land degradation, this article identifies ten different dimensions, which illustrate the importance of qualifying statements about "the costs of land degradation" by rigorous clarification of what type of measure has been used. Furthermore, with regard to methods of deriving costs of land degradation, this article illustrates a spectrum of approaches. One sub-group has used a replacement cost approach, while a productivity loss approach has been used in the majority of the studies reviewed. The latter approach is further sub-divided into five

different categories ranging from the most informal to the most rigorous. It is evident that very few original estimates exist of soil loss yield decline functions in Sub-Saharan Africa. Hence, some of the basic work in this area is "recycled" for use in areas that may exhibit quite different conditions. Finally, with regard to study results, there is considerable variance of cost estimates pertaining even to the same country. These differences can be explained, however, and a rational assessment allows a choice of the most appropriate results. Results across countries are reasonably well clustered in terms of their productivity impact per soil loss unit. With local knowledge of soil conditions, but in the absence of local yield loss data, this provides a useful interval of reasonable assumptions. As one would expect, the national costs of land degradation vary considerably across countries. This sometimes leaves room for considerable investment in soil and water conservation, but should not invoke images of a rapidly approaching doomsday.

TI: Population Pressure and Land Degradation: The Case of Ethiopia
AU: Grepperud,-Sverre
SO: Journal-of-Environmental-Economics-and-Management; 30(1), January 1996, pages 18-33.
AB: This paper tests the population pressure hypothesis (PPH) for the Ethiopian Highlands using quantitative methods. The hypothesis posits that under comparable physical conditions heavily eroded areas occur in highly populated regions. A severity of soil erosion index (SESI), a proxy for some types of water erosion, was chosen as the dependent variable. Because the dependent variable is categorical and ordinal, an ordinal cumulative logit model was chosen for the analysis. The findings imply that as pressure from people and livestock exceeds some threshold, a rapid degradation of land take place. (c) 1996 Academic Press, Inc.

TI: Land Degradation and Economic Sustainability
AU: Singh,-Jai; Singh,-Jai-Pal
SO: Ecological-Economics; 15(1), October 1995, pages 77-86.
AB: Injudicious use of irrigation water due to increased irrigation facilities in some rice-wheat growing regions of northwest India has created the problems of irrigation-induced soil salinity and waterlogging. Apart from disturbing the healthy argi-ecological balance, these soil hazards deteriorate the soil health and fertility status of the soil resulting in low agricultural production, farm income and consequent reduction in farm labour employment. The present study of the Western Jamuna Canal and Bhakra Canal in Haryana (a north-western Indian state) based on a sample of 248 respondents attempts to assess the effect of irrigation-induced soil salinity and waterlogging on farm production, income and employment. The study observed a huge cut in non-land resource use on problem (salt-affected) soils as compared to normal soils, which consequently resulted in low farm production and income. Employment opportunities were also greatly reduced on problem soils.

TI: Cattle Numbers, Biomass, Productivity and Land Degradation in the Commercial Farming Sector of Namibia, 1915-95
AU: Lange,-Glenn-Marie; Barnes,-Johanthan-I.; Motinga,-Daniel-J.

SO: Development-Southern-Africa; 15(4), Summer 1998, pages 555-72.
AB: As part of a natural resource accounting project undertaken in Namibia, livestock accounts have been drawn up and are being used to analyse the relationship between numbers of livestock, rainfall, land degradation, and economic and policy variables. Part of the analysis concerns an investigation into trends in cattle numbers, changes in cattle biomass and the productivity of livestock in commercial areas. Cattle numbers increased from 1914 until 1960, then declined steadily to half that number. This decline was at least partly due to deliberate actions by farmers to improve herd productivity and production efficiency. Although beef reduction did not decline over this period, productivity is still lower than potential industry standards. Range degradation (bush encroachment) may have contributed to this curtailment. This investigation has implications for an understanding of long-term carrying capacity, land degradation and rangeland management, and for agricultural development policies in Namibia and similar regions in southern Africa.

TI: Land Degradation in Namibia North of the Tropic of Capricorn: An Outline of the Problem
AU: Kempf,-Jurgen
SO: Applied-Geography-and-Development; 50(0), 1997, pages 21-37.

TI: Land Degradation in South Africa: Conventional Views, Changing Paradigms and a Tradition of Soil Conservation
AU: Critchley,-Wiliam-R.-S.; Netshikovhela,-Escort-M.
SO: Development-Southern-Africa; 15(3), Spring 1998, pages 449-69.
AB: Land degradation is currently a major concern in South Africa. However, awareness of the problem and attitudes towards it have changed little over the past century. Soil erosion and veld degradation are continually being depicted as acute problems, and overpopulation, overstocking and poor agricultural practices are viewed as the major causal factors. Internationally, however, a new paradigm is emerging, which takes a somewhat more optimistic view of the situation in Africa. One of the basic tenets of this changing perception is that there exists an untapped wealth of indigenous knowledge about the environment and associated human potential. Within this context, this study examines and describes the local tradition of stone terracing on cropland within the former Venda in the Northern Province of South Africa. This living tradition has deep historic roots and local farmers have a remarkably well-developed understanding of the causes and effects of erosion. While the research location is unique in many ways, this study indicates that farmer tradition and innovation in the former homelands may be more common than has been supposed, and should not be ignored but actively sought out and built upon.

TI: Land degradation in Tanzania: Perception from the village
AU: Dejene,-Alemneh, et-al.
SO: Technical Paper, no. 370. Washington, D.C.: World Bank, 1997, pages x, 79.
AB: Explores the most significant issues affecting levels of productivity and land quality at the community and village level, focusing on the case of Kondoa District, Tanzania. Examines farmers' perceptions, particularly their understanding and interpretation of

factors and indicators that they link to soil erosion and fertility decline, the level of degradation of crop and pastureland, and the institutional capacity to implement social conservation and fertility measures--with particular regard to land tenure policies, local organizations, and extension service. Identifies the technologies, best practices, and indigenous knowledge used by households to control erosion, enhance soil fertility, and increase crop and livestock productivity among smallholders. Investigates the reasons for farmers adopting or not adopting recommended technologies. Summarizes major findings and presents policy implications. Coauthors are Elieho K. Shishira, Pius Z. Yanda, and Fred H. Johnsen. Dejene is a consultant and the coordinator of the Soil Fertility Initiative in the World Bank's Africa Region. No index.

TI: Upland-Lowland Production Linkages and Land Degradation in Bolivia
AU: Painter,-Michael
SO: Painter,-Michael; Durham,-William-H., eds. The social causes of environmental destruction in Latin America. Linking Levels of Analysis series. Ann Arbor: University of Michigan Press, 1995, pages 133-68.

TI: Induced Innovation and Land Degradation: Results from a Bioeconomic Model of a Village in West Africa
AU: Barbier,-Bruno
SO: Agricultural-Economics; 19(1-2), September 1998, pages 15-25.
AB: This paper introduces a modeling method which simulates a village's response to population and market pressure. The method combines a recursive and dynamic linear programming model with a biophysical model of soil condition and plant growth that predicts yields and land degradation for different type of land, land use and cropping patterns. The linear programming model simulates farmers' plans aggregated at the village level under constraints of risk aversion, food consumption, land area, soil fertility, soil depth, labor and cash availability. Detailed agroecological factors determine the main processes of land degradation. A large number of technological alternatives, representing different degrees of labor and/or land-saving techniques available in the study areas, are introduced, taking into account their respective constraints, costs and advantages. The method has been calibrated for a village located in the sub-humid region of Burkina Faso. Several simulations are carried out to the Year 2030. The results show that population pressure leads to intensification and investment in land conservation practices but not necessarily to better farm incomes. Increasing market opportunities can play a more positive role in boosting productivity, but for the next decades the best way to increase production per farmer is to let farmers migrate from the high-population-density areas to the low-population-density areas because, under the current economic conditions of most Sahelian countries, intensification per hectare is still more expensive than the fallow system.

TI: Land Degradation, Agricultural Productivity and Common Property: Evidence from Cote d'Ivoire
AU: Ahuja,-Vinod
SO: Environment-and-Development-Economics; 3(1), February 1998, pages 7-34.

AB: This study provides evidence on the effectiveness of community controls in regulating the use of common agricultural land in Cote d'Ivoire and tests for factors such as group size, ethnic and income heterogeneity of the group, income and resource stock levels, in explaining the variation in effectiveness across communities. The results indicate significant deterioration in community controls. These results point towards the need for a comprehensive policy framework towards agriculture in general and land tenure in particular. The study also finds that smaller and ethnically homogenous communities are better able to coordinate their actions, thereby internalizing a higher proportion of the value of land as a factor of agricultural production than their large ethnically heterogeneous counterparts. No evidence is, however, found in favour of income heterogeneity hindering or facilitating collective action.

TI: Land Degradation: Links to Agricultural Output and Profitability
AU: Gretton,-Paul; Salma,-Umme
SO: Australian-Journal-of-Agricultural-and-Resource-Economics; 41(2), June 1997, pages 209-25.
AB: To understand land degradation and assess policy responses, knowledge is needed of the bio-physical causes, the economic effects on farms and the incentives farmers face to avoid or ameliorate the degradation. An empirical study of land degradation in the Australian state of New South Wales is presented in this article. The results suggest that there are incentives for farmers to co-exist with certain forms of degradation, while there are also incentives to avoid some other forms.

TI: Poverty, Land Degradation and Climatic Uncertainty
AU: Grepperud,-Sverre
SO: Oxford-Economic-Papers; 49(4), October 1997, pages 586-608.
AB: This paper studies farmers who operate in a risky environment at a minimum of subsistence. In particular, the author investigates how poverty influences the soil conservation decision in the absence of formal insurance markets. It is shown that the consequences for the optimal soil conservation decision from poverty differ across the three agricultural activities considered in the model. Output-induced soil depletion increases with poverty while soil conservation incentives improve for the same reason when conservation inputs and win-win technologies are considered. Consequently it remains unclear whether poverty in general induces farmers to manage their resources poorly in the long run.

TI: Structural Adjustment Policies and Land Degradation in Tanzania
AU: Oygard,-Ragnar
SO: Forum-for-Development-Studies; 0(1), 1997, pages 75-93.
AB: The problem of land degradation is discussed for the Tanzanian case, especially how the rate of degradation is affected by changes in economic policy. Possible impacts of economy-wide adjustment policies on land degradation are assessed and found to be small--primarily because the adjustment policies have so far not induced dramatic changes in agricultural production due to numerous infrastructural and institutional constraints. To reduce soil erosion and soil mining effects of agriculture it is crucial to stimulate productivity increase. This should be supplemented with specific policies aimed

at reducing problems such as excessive offtake of open access resources, or emissions of hazardous pesticides.

TI: Land Degradation, Soil Conservation and Risk: Evidence from a Dynamic Model of Philippine Upland Agriculture
AU: Shively,-Gerald
SO: University of Wisconsin, Ph.D. 1996

TI: The Role of Taxation in the Prevention and Treatment of Land Degradation
AU: Peterson,-Deborah
SO: Review-of-Marketing-and-Agricultural-Economics; 63(1), Part 2, April 1995, pages 209-16.
AB: Tax provisions for land care are often justified as corrections for externalities. It is argued in this paper that land care provisions can be justified independently of an externality correction objective, since land care provisions can be viewed as a partial correction of the failure of the depreciation provisions in the INCOME TAX ASSESSMENT ACT 1936 to recognize that items other than plant and articles devalue through use. This argument only applies to depreciation over the effective life of the asset and not to the provision of accelerated depreciation. There may be a role for Pigouvian subsidies in the case of land degradation to address the externality problem, and some degree of accelerated depreciation may be viewed as an approximation of such. It is argued that direct subsidies may be preferred to either the current or redesigned income tax provisions.

TI: The Costs of Land Degradation in Sub-Saharan Africa
AU: Bojo,-Jan
SO: Ecological-Economics; 16(2), February 1996, pages 161-73.
AB: The overriding question that this article addresses is: What are the immediate and future costs of land degradation for a nation? The objectives of the analysis are to find appropriate measures to express the national level costs of land degradation, and suitable methods to estimate such measures. Furthermore, the aim is to document and interpret the results of existing studies. To meet these objectives, a set of 12 studies from Sub-Saharan Africa (SSA) is reviewed, using a consistent, cross-study analytical framework derived from the objectives above. With regard to measures of the cost of land degradation, this article identifies ten different dimensions, which illustrate the importance of qualifying statements about "the costs of land degradation" by rigorous clarification of what type of measure has been used. Furthermore, with regard to methods of deriving costs of land degradation, this article illustrates a spectrum of approaches. One sub-group has used a replacement cost approach, while a productivity loss approach has been used in the majority of the studies reviewed. The latter approach is further sub-divided into five different categories ranging from the most informal to the most rigorous. It is evident that very few original estimates exist of soil loss yield decline functions in Sub-Saharan Africa. Hence, some of the basic work in this area is "recycled" for use in areas that may exhibit quite different conditions. Finally, with regard to study results, there is considerable variance of cost estimates pertaining even to the same country. These differences can be explained, however, and a rational assessment allows a choice of the

most appropriate results. Results across countries are reasonably well clustered in terms of their productivity impact per soil loss unit. With local knowledge of soil conditions, but in the absence of local yield loss data, this provides a useful interval of reasonable assumptions. As one would expect, the national costs of land degradation vary considerably across countries. This sometimes leaves room for considerable investment in soil and water conservation, but should not invoke images of a rapidly approaching doomsday.

TI: Rethinking research on land degradation in developing countries
AU: Biot,-Yvan, et-al.
SO: Discussion Papers, no. 289. Washington, D.C.: World Bank, 1995, pages x, 139.
AB: Presents the results of a World Bank workshop held in Washington, D.C., in 1989, aimed at developing a research agenda for issues of land degradation. Focuses on changing paradigms in land degradation research; rethinking science and technology in land degradation; rethinking individual and collective decision-making behavior; and a matrix for land degradation research. Appendices include case studies of land degradation in Nepal and Zimbabwe. Coauthors are Piers M. Blaikie, Cecile Jackson, and Richard Palmer-Jones. Biot is a research officer on the Bionte Project sponsored by INPA, Manaus, Brazil, and the Overseas Development Agency. No index.

TI: Technical Change in Agriculture and Land Degradation in Developing Countries: A General Equilibrium Analysis
AU: Coxhead,-Ian-A.; Jayasuriya,-Sisira
SO: Land-Economics; 70(1), February 1994, pages 20-37.
AB: This paper analyzes the role of economic linkages between upland agriculture, lowland agriculture, and other sectors in developing economies, and the potential for welfare enhancing shifts from more to less erosive upland land use patterns. Comparative statics results are obtained from analytical and numerical general equilibrium models. They indicate that the green revolution in lowland agriculture helped alleviate upland land degradation and that policies aimed at slowing land degradation through technical progress in upland crops may have the opposite of their intended effects. The results highlight the need for integrated policy packages to reduce upland land degradation in developing countries.

TI: Land Degradation Issues in Canadian Agriculture
AU: Stonehouse,-D.-Peter; Bohl,-Martin
SO: Canadian-Public-Policy; 16(4), December 1990, pages 418-31.
AB: Recent technical developments in farming have exacerbated problems of land degradation and downstream watercourse pollution. The latter justifies governmental intervention more than on-farm costs or food security. Several intervention alternatives could be employed, each having different implications for private and public acceptability, administrative feasability, and workability. To date, Canadian public intervention has relied on universally-applied financial incentives and voluntary compliance. The inherent limitations are that differences among farmers in conservation effort are not considered. A targeted approach is suggested as one means of

incorporating inter-farm and inter-farmer differences, thereby raising the potential for eliciting greater conservation effort.

TI: Economic Aspects of Land Degradation in Australia
AU: Kirby,-Michael-G.; Blyth,-Michael-J.
SO: Australian-Journal-of-Agricultural-Economics; 31(2), August 1987, pages 154-74.

TI: Land degradation: Problems and policies
AU: Chisholm,-Anthony; Dumsday,-Robert, eds.
SO: CRES Monograph series, no. 18, Cambridge; New York and Melbourne: Cambridge University Press in association with the Centre for Resource and Environmental Studies, Australian National University, 1987, pages xix, 404.
AB: Twenty contributions, with commentary, presented at a workshop on land degradation and public policy hosted by the Centre for Resource and Environmental Studies at the Australian National University in September 1985. Papers focus on physical and biological aspects of land degradation; social costs; legal, institutional, and sociological factors; behavioral causes, economic issues, and policy instruments; pressure groups, public agencies, and policy formulation; and an overview of more effective policies of controlling land degradation. Contributors include economists. Chisholm is at the Australian National University. Dumsday is at La Trobe University. Bibliography; index.

TI: Degradation Pressures from Non-agricultural Land Uses
AU: Woods,-Lance
SO: Chisholm,-Anthony, ed.; Dumsday,-Robert, ed. Land degradation: Problems and policies. CRES Monograph series, no. 18, Cambridge; New York and Melbourne: Cambridge University Press in association with the Centre for Resource and Environmental Studies, Australian National University, 1987, pages 108-18.

TI: Abatement of Land Degradation: Regulations versus Economic Incentives
AU: Chisholm,-Anthony
SO: Chisholm,-Anthony, ed.; Dumsday,-Robert, ed. Land degradation: Problems and policies. CRES Monograph series, no. 18, Cambridge; New York and Melbourne: Cambridge University Press in association with the Centre for Resource and Environmental Studies, Australian National University, 1987, pages 223-47.

TI: Towards More Effective Policies for Controlling Land Degradation: Contributions from the Social Sciences
AU: Dumsday,-Robert
SO: Chisholm,-Anthony, ed.; Dumsday,-Robert, ed. Land degradation: Problems and policies. CRES Monograph series, no. 18, Cambridge; New York and Melbourne: Cambridge University Press in association with the Centre for Resource and Environmental Studies, Australian National University, 1987, pages 315-34.

TI: Towards More Effective Policies for Controlling Land Degradation: The Practicalities of Policy Solutions

AU: Davis,-Bruce
SO: Chisholm,-Anthony, ed.; Dumsday,-Robert, ed. Land degradation: Problems and policies. CRES Monograph series, no. 18, Cambridge; New York and Melbourne: Cambridge University Press in association with the Centre for Resource and Environmental Studies, Australian National University, 1987, pages 335-40.