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Book reviews

This important book is reviewed below by an eminent scientist from the developing world. Next month we shall publish another review by a well-known scientist from the developed world.

Livestock's Long Shadow: Environmental Issues and Options, H. Steinfeld, P. Gerber, T. Wassenaar, V. Castel, M. Rosales, C. de Haan, Food and Agriculture Organization (FAO), Rome, Italy (2006), 390 pp., Soft cover, ISBN 978-92-105571-7

This new multi-authored publication from FAO brings together a valuable assessment of the environmental consequences of livestock production, climate change and use of the natural resources in the face of the increasing demand for foods of animal origin. This was undertaken by the Livestock, Environment and Development (LEAD) initiative. LEAD is supported by the Global Environment Facility (GEF), several other donors, and is coordinated by FAO's Animal Production and Health Division. The report presents probably for the first time, descriptions as well as quantitative data of the full impact of the livestock sector on environmental problems in both developing and developed countries. The assessment enabled potential technical and policy considerations that emphasise the need for urgent attention and corrective measures.

The book is organised into seven chapters: Introduction, Livestock in geographic transition, Livestock's role in climate and air pollution, Livestock's role in water depletion and pollution, Livestock's impact on biodiversity, Policy challenges and options, and Summary and conclusions. Chapters 1 and 2 provide the background of the global importance of the livestock sector, trends, impact of structural changes and land degradation. Chapters 3, 4 and 5 have detailed discussions on climate change and air pollution, water, and biodiversity respectively. Each chapter has a useful summary of the impacts as well as mitigating options. Chapter 6 discusses policy options to deal with "pressure points": expansion into natural ecosystems, rangeland degradation, nutrient loading in livestock concentration areas, and intensive feedcrop production. Chapter 7 presents a useful overall summary and conclusions.

The reference throughout the book to what constitutes feedcrops is unclear. The discussions in each chapter are backed by the most recent and up to date statistical data, and provide a clear picture of the trends.

On a global perspective, this book provides a very timely diagnosis and facts on recent environmental impacts and their many implications. Individual boxes within chapters are helpful in clarifying the discussions and there is a comprehensive list of references. The appendices include global maps on various issues such as distribution of individual animal species and productivity, ecoregions affected by livestock, total greenhouse emissions, tables and figures on individual aspects, and the methodology for quantification and analysis. Unfortunately, there is no subject index to help the reader.

The major finding of the assessment is that livestock's contribution to environmental damage is on a massive scale concerning land degradation, climate change, air pollution, water shortage, water pollution, and loss of biodiversity. This is reflected in the identification of the following impacts:

- The spatial and commercial concentration of livestock production with attendant N and P surpluses, toxic materials, land and water contamination, and loss of biodiversity
- Increased anthropogenic greenhouse gas emissions, especially nitrous oxide
- Degradation of the arid and semi-arid lands especially in Africa, South and Central Asia, and
- Increased demand for cereal feeds.

The discussions suggest that in the absence of addressing these problems and the issues, the situation can worsen. In the words of the authors "*if production doubles, without any reduction in environmental measures per unit of production, then environmental damage will double*". The statement while seemingly factual is however, disturbing in the broader context of the implications to such interrelated issues as socio-economic status, livelihood

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systems, nutritional and food security, and the poverty dimension. More importantly, the message that is conveyed is that the environmental impacts of livestock production — and the required attention, are far more urgent than strategies to address ways to increase productivity from animals given the deficits, and the need to double current meat and milk production by 2050 as stated.

Probably because of the seriousness of the many and varied environmental impacts and the urgent need for solutions, the detailed discussions have tended to be controversial. Intensification and industrialisation are considered inevitable in the long term due to the structural change process. By inference, the non-ruminant (poultry and pigs) sector are favoured in line with their highest growth rates, supportive policies, and current trends. By comparison, the pathways for intensification and industrialisation of the less efficient and slower growing ruminants sector is less clear, and continues to be neglected. The reference to landless systems for example, overlooks another category: namely rural landless systems particularly in the less favoured semi-arid and arid regions where transhumance and nomadism are very common. These involve millions of resource poor farmers, agricultural labourers and the ownership of mainly small ruminants that are associated with land degradation as well.

Associated with above is the future of small or smallholder farms. Recent statistics suggest that out of an estimated 520 million farms worldwide, 85% are small farms (<2 ha of land) out of which 87% are found in Asia. Additionally, about 678 million, who keep livestock and represent two thirds of the rural poor, are engaged in various livestock activities for their livelihoods in small farms. These farms continue to produce a very significant proportion of the total output of milk, ruminant meats, pork, poultry meat and eggs. Thus the suggestion by the authors that "*current trends in structural change imply the likely and probably accelerating exit of smallholder livestock producers in developing and developed countries*" is sweeping, questionable, and perhaps unrealistic. On the contrary, the Asian experience consistently suggests that these small farms systems, with their low inputs, traditional ways and efficiency in natural resource management have demonstrated remarkable resilience and self-reliance over time — despite the influence of many externalities; access to improved technology and policies favouring market-oriented participation of small farmers can significantly enhance their productive capacity.

It would perhaps have been especially useful and more appropriate if treatment and discussions had concurrently provided an update that examined in depth the entire portfolio of the opportunities for food production from livestock — productivity and productivity growth with reference to geographical production locations, agro-ecological zones, improved production systems, animal species, land use, potential possibilities and opportunities. Emerging environmental problems, zoonosis and the need for urgent policies could then have been identified directly with these aspects and the totality of use of the animal genetic resources for food production. Such a balanced and integrated view of the production, environmental consequences and regulatory aspects, would also have neutralised any undue negative sentiments and promoted the stature of livestock.

The comments do not detract from the value of this publication and the authors are to be commended for the difficult and innovative task. The book's main objective is to emphasise and to highlight growing environmental impacts associated with livestock production — the many issues and need for action is candid and clear, notwithstanding the alarm bells it also conveyed. Urgent affirmative and collective action is therefore necessary at the government and other levels. The response merits very high priority and cannot be postponed, and hopefully this publication will encourage that very process. The book is essential reading for everyone concerned with animals — scientists, planners, decision makers, development agents and others associated with livestock's long shadow.

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Indicators of milk and beef quality, Eds: J.F. Hocquette and S. Gigli, Wageningen Academic Publishers, (2005), 464 pages, hardcover, EAAP Scientific Series No. 112

The book "Indicators of milk and beef quality" (EAAP Publication 112) is published under authority of the Cattle Commission of the European Association for Animal Production (EAAP), with, as scientific editors, Jean-Francois Hocquette, France, and Sergio Gigli, Italy. This book contains the papers presented at the EAAP Congress 2004 in Bled, Slovenia, in a session devoted to this topic. In addition, four review papers presented orally on proteomics, beef quality, lipid metabolism in cattle and cheese quality are included as well as some papers from invited authors and from the previous meeting of EAAP. The short communications in this session describing original results and papers from other similar sessions are added.