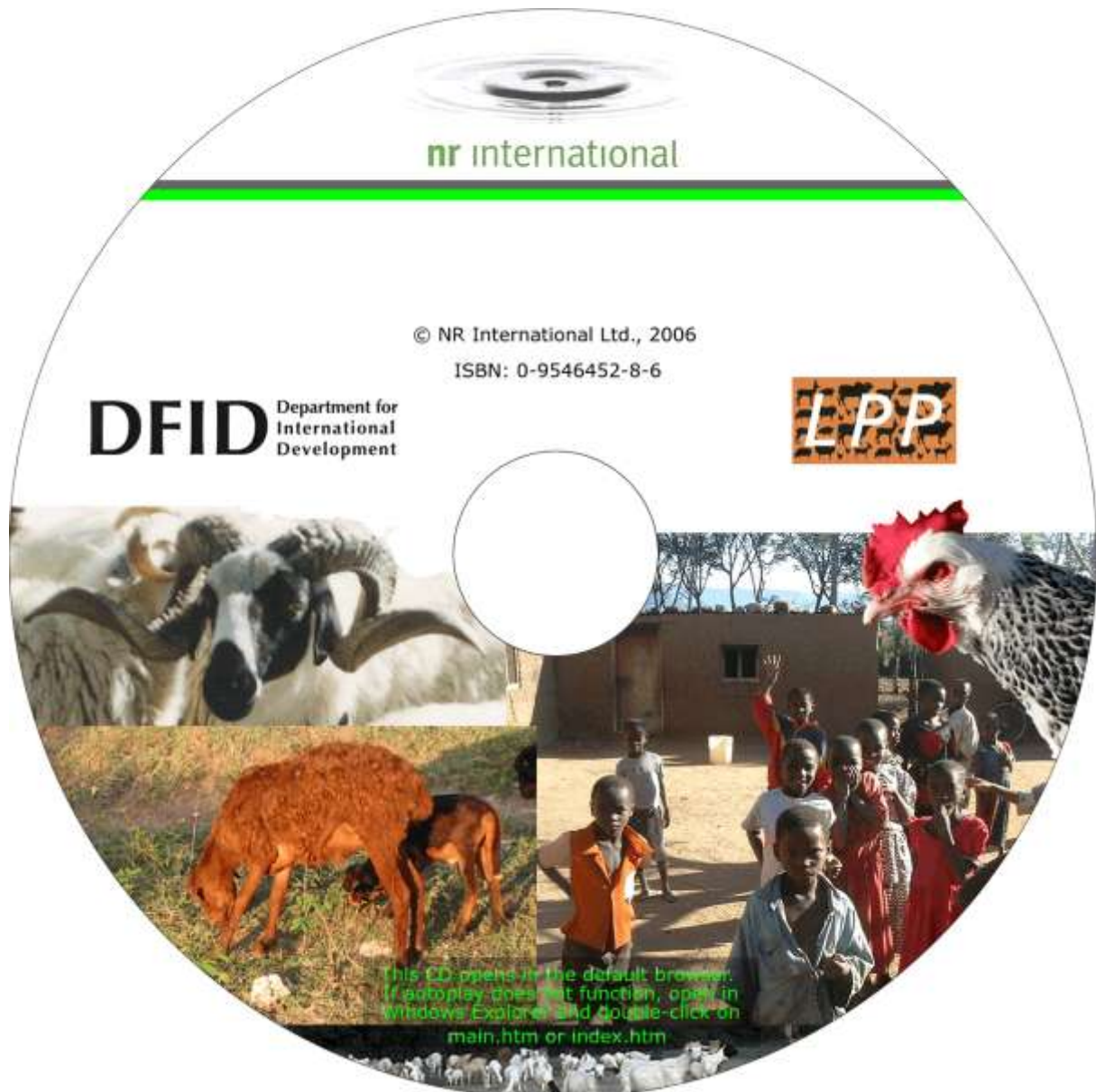


Smallstock in Development Toolbox



Final Report: Lessons Learned
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1 Introduction

Livestock in general, and smallstock in particular, have an important role to play in enhancing the livelihoods of the poor by improving food security at household level and providing cash for household needs. Smallstock keepers, and those NGOs and agencies that work with or interact with them, need access to the considerable and growing body of information on smallstock husbandry and production. But how can the delivery of this information to those that need it be accomplished? The increasing number of computers and computer users provides a significant opportunity for distribution of information via CD-ROM. The *Smallstock in Development* toolbox forms a resource for use by NGOs, extension workers and others involved in livestock development.

The primary purpose of the Smallstock in Development Toolbox is to provide institutions or individuals that inform or interact with resource-poor livestock keepers with information on smallstock in an accessible manner to assist in tackling some of the problems they face. The toolbox provides a range of practical information, descriptions of techniques, fact-sheets and background material to assist in increasing sustainability and efficiency of smallstock production. Selected outputs are included from over 100 research projects carried out by DFID's Livestock Production Programme (LPP), Animal Health Programme (AHP) and other bodies. The toolbox additionally provides general background information on smallstock, their importance, feeding and nutrition, as well as an introduction to aspects of livestock health and husbandry. Sections of the toolbox also deal with social and marketing aspects related to poor livestock keepers in particular, and include summaries or participatory and other techniques for communication and dissemination.

The CD-ROM itself forms the main body of the final report. This document provides a brief summary of the CD-ROM and outlines a number of important lessons learned during the process of compiling the CD-ROM.

2 The Smallstock in Development CD-ROM

Most development related information can be included electronically in one format or another on CD-ROM, and there are few, if any, instances where the original material has not been created electronically. A single CD can hold a large amount of material, is cheap to reproduce and relatively easy to distribute in large numbers. Moreover, access to suitable personal computers (PCs) is increasing in the key target groups, in this case NGOs and extension agents working with smallstock keepers.

The *Smallstock in Development* toolbox provides a range of practical information, descriptions of techniques and fact-sheets to assist with increased survival of smallstock, and in increasing the sustainability of smallholder operations and the productivity of their animals. In order that users may make best use of this information, it is supported by a significant body of background material, technical information, further reading materials, and discussion of topics related to smallstock husbandry, feeding and nutrition, health, and the important field of nutrition-health interactions. Cross-cutting issues such as marketing, socio-economic interactions, gender, and the environment further contribute to increasing awareness of the inter-connected nature of many of the central issues.

The tools include technical interventions, husbandry advice, policy guidelines and empowerment suggestions. The overall scope is to improve the management of knowledge generated by research and generally improve the communication between farmers and the research institutions. The toolbox does not attempt to provide all the answers to what is

clearly a large and complex topic, but is based on the experience of research carried out by the UK's Department for International Development's (DFID's) Livestock Production Programme (LPP) and other bodies.

In constructing the toolbox a number of simple guidelines were followed in the creation of individual documents or information on specific topics: jargon was avoided where possible, and explained where necessary; and simplicity rather than complexity was sought. The seven-Cs of effective communication – creative, credible, convincing, complete, current, clear, and concise – were borne in mind. However, the key to providing effective delivery of information includes not only the document containing the information itself, but ways of “finding” these documents, especially given that the users may not have a clear idea of what they are looking for, perhaps simply that there is a problem requiring a solution. It is also important to recognise that different users, with varying experience and diverse backgrounds will tend to use an information resource in different ways and focus on different components of the details provided.

The html format developed for use on the Internet provided a robust and flexible mechanism for delivery of much of the available information. Importantly, no additional software is required beyond the Internet browser installed by default on virtually all personal computers. Combined with the use of Adobe Acrobat pdf files and the free Acrobat reader software this format enabled an information resource to be constructed for, and tailored to, any given set of topics. Two different Acrobat installation files were provided on the CD to cater for both older and newer PCs. Concept maps (see Figures 1 to 5) additionally provided a visual means of illustrating the breadth and scope of information presented, as well as an intuitive means of navigation within the toolbox.

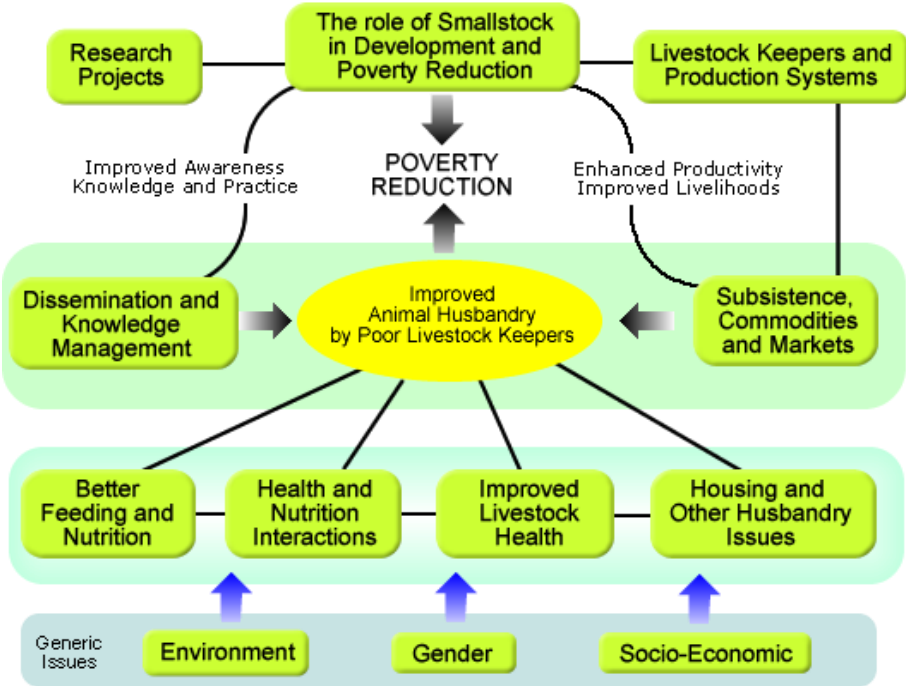


Figure 1. Concept map from the Smallstock in Development Toolbox illustrating the first level of topics and primary relationships between them.

These concept maps also provided an important mechanism for drawing attention to related issues which in a normal paper and text based system may otherwise be very easily ignored. During a discussion of animal feeds a user may, for example, also be made aware of health, nutrition-health interactions, environmental, welfare, economic and marketing issues.

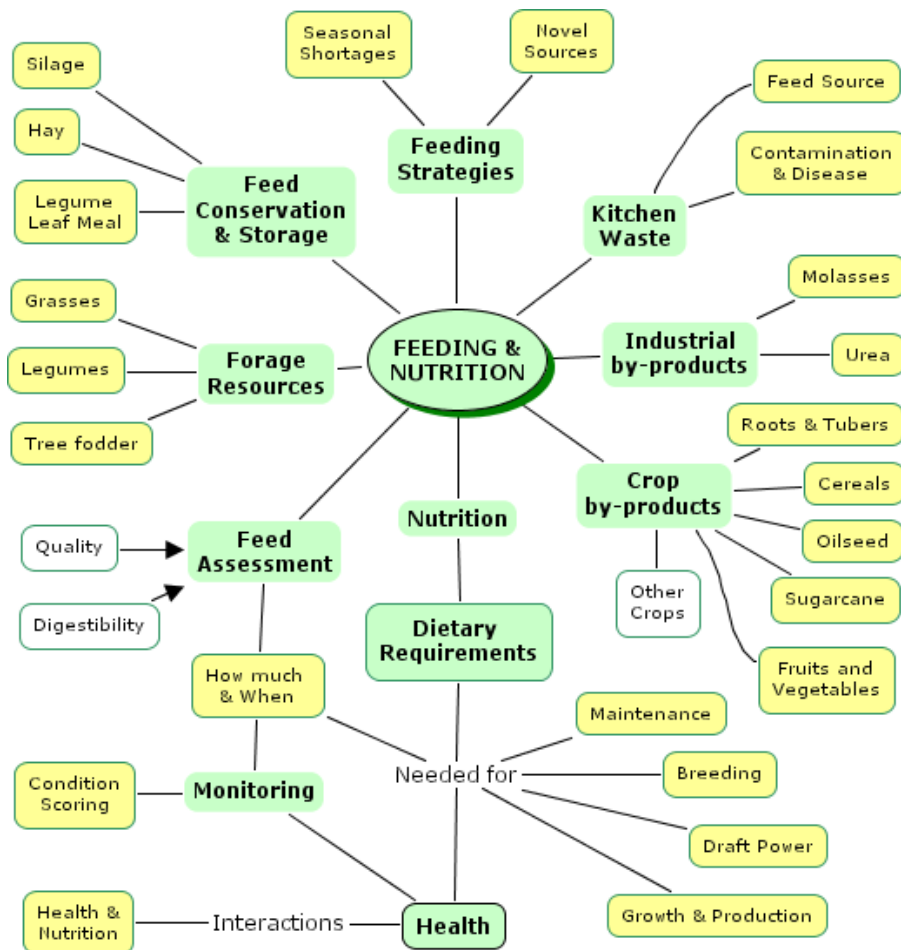


Figure 2.

Concept map illustrating the primary relationships and information available in the section on Feeding and Nutrition.

On the CD, Clicking on one of the boxes leads to a page focussed on that topic, including further concept maps where relevant.

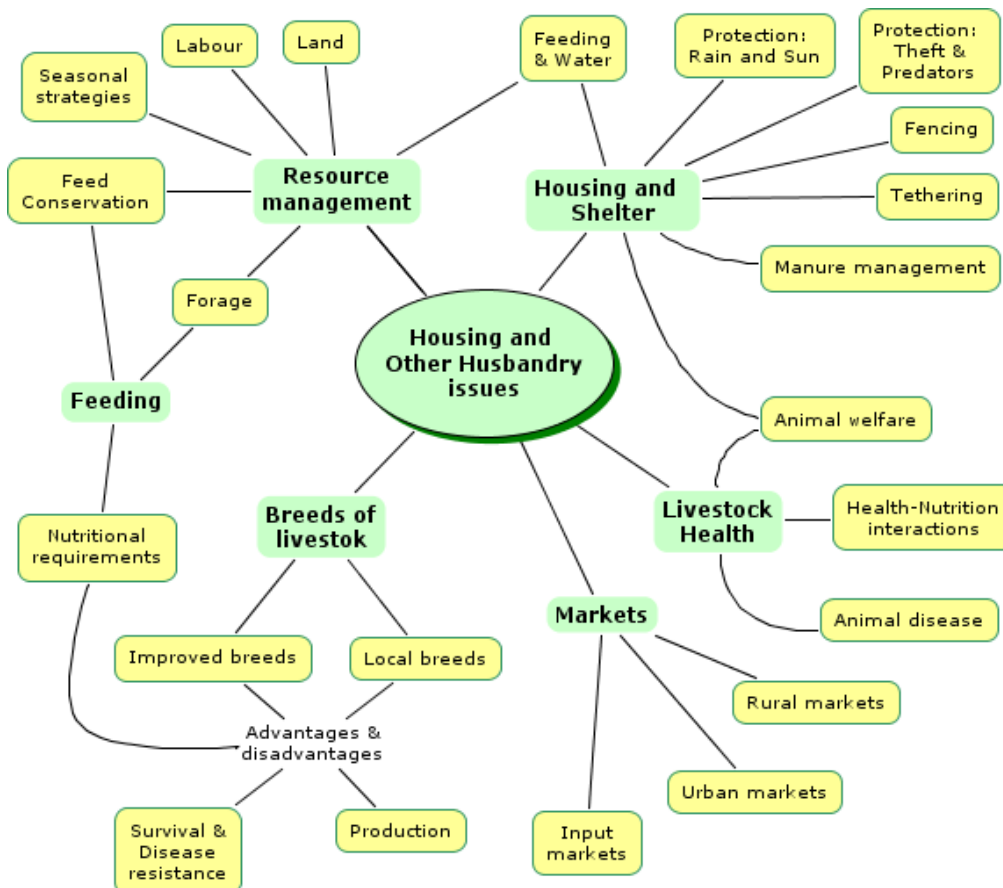


Figure 3.

Concept map illustrating the primary relationships and information available in the section on Housing and General Livestock Husbandry

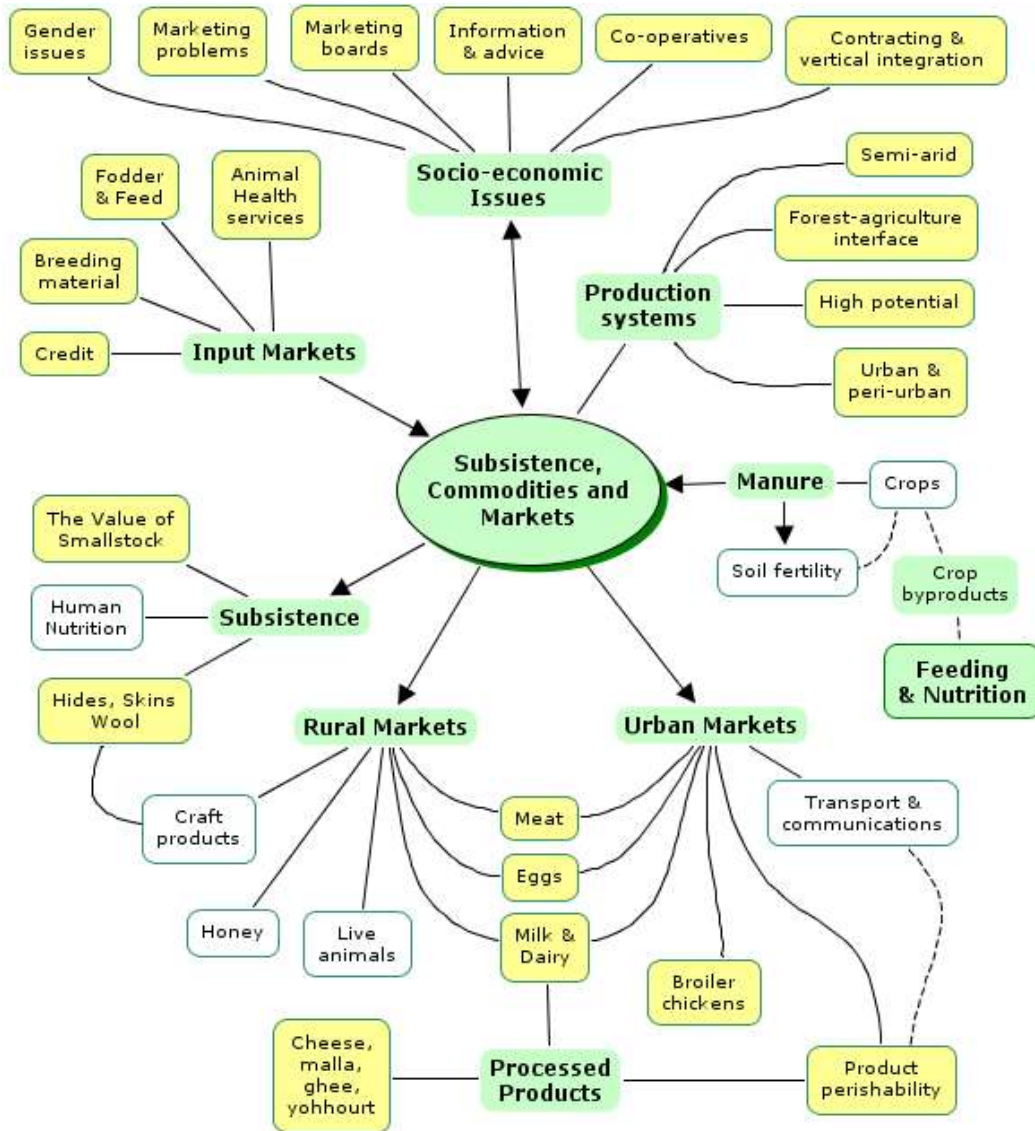


Figure 4.
 Concept map illustrating the primary relationships and information available in the section on Subsistence Commodities and Markets

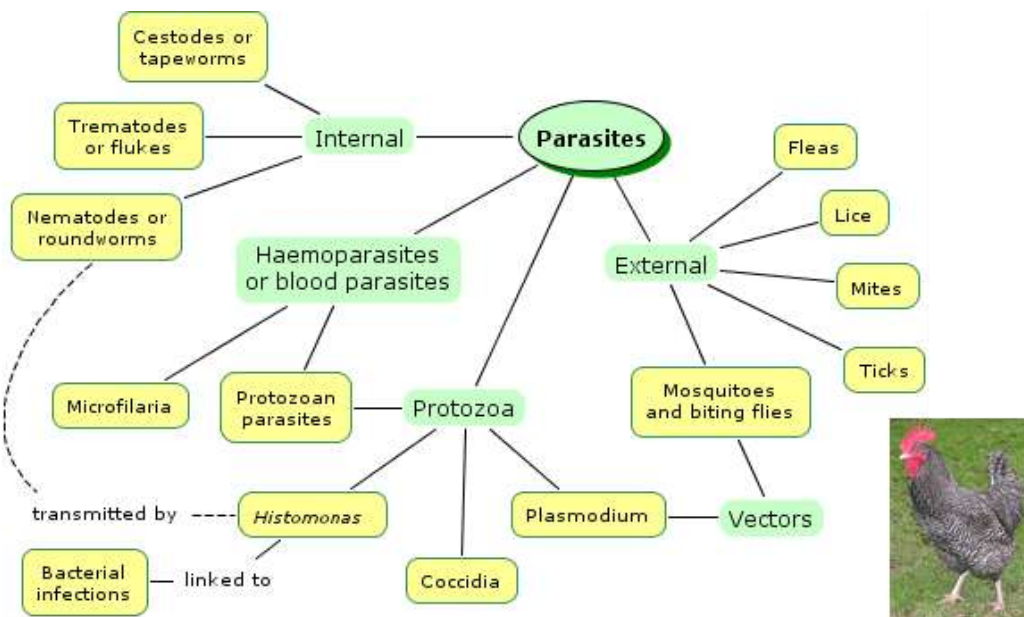


Figure 5.
 Concept map illustrating the primary relationships and information available in the section on Parasitic Diseases in Poultry

Information provided by the toolbox is text-based with diagrams and illustrations as appropriate. Photographs and other graphic images were added to provide additional interest. Menus, hyperlinks, in-text buttons or icons, and graphic images were all employed to assist the user in navigating from any chosen starting point to explore the available information. Colour was used for emphasis or to draw attention to specific topics.

The information content and navigation within the toolbox was further supported by a comprehensive full-text search mechanism, able to find text within both html and pdf documents.

The material on the CD-ROM includes more than 6,300 files contained in over 400 folders and sub-folders. These include over 1,800 linked html files and more than 700 Acrobat pdf files. Together with associated images, and a comprehensive search engine, this totals more than 600 Mbytes. Many of these documents, reports, fact-sheets or html pages can be printed and used as they are or read on-screen. Alternatively, the content of many html pages can be used and adapted by users (using a suitable text editor) and combined with additional locally available material and knowledge to prepare locally-specific and enhanced versions of individual topics.

3 Lessons Learned

Lessons learned include:

- The Importance of Smallstock
- The Need for Background Information
- The Information Gap and Issues of Copyright
- Appropriate electronic document formats

3.1 *The Importance of Smallstock*

A significant number of publications, including outputs from the LPP research programmes, include some reference to the importance of smallstock. Typically the advantages and importance include the fact that when compared with larger livestock they are less costly to acquire, are cheaper and easier to maintain, and more convenient for consumption within the household. Similarly, the death of a single animal is less damaging, whilst they tend to grow and breed faster and can often thrive on harsher terrain. However, whilst all these are highly relevant, it is likely that a majority of references to the importance of smallstock in relation to development and poverty reduction are missing what is probably one of the most important factors. This oversight is almost certainly because the major benefits are not directly related to livestock production but to human dietary needs, and particularly to the impact of nutritional factors on cognition and the ability to learn.

A review of information relating to smallstock and poverty highlighted the importance of nutritional factors on cognitive ability. A number of studies have indicated that malnutrition in early childhood has serious, long-term consequences, hindering motor, sensory, cognitive, social and emotional development. Malnourished children are less likely to perform well in school and are more likely to grow into malnourished adults, at greater risk of disease and early death. Malnutrition and micronutrient deficiencies are linked to:

- High child and maternal mortality rates (over 50% of child deaths),
- Poor educational outcomes, lower productivity, and a consequent tendency towards increasing poverty,
- Higher morbidity and mortality from infectious and non-communicable diseases.

Four major nutrition-related disorders have been shown to be linked to a reduced capacity for learning and a decreased cognition, and these can be combated by a supply of eggs and milk:

	<u>Eggs</u>	<u>Milk</u>
• Protein-Energy Malnutrition (PEM)	✓	✓
• Iodine deficiency	✓	✓
• Iron deficiency	✓	
• Essential fatty acids deficiency	✓	✓

Although there are a complex set of relationships involved, it is clear that the problems of Protein-Energy Malnutrition can to a large extent be solved through consumption of home-produced livestock products, especially eggs and milk, but of course also meat. Smallstock keeping by resource-poor households therefore has a significant potential for reducing the incidence and levels of PEM. Of particular importance is the keeping of poultry for egg production, and, in suitable localities, goats for milk production. A study by Alderman et al. (1997)¹ concluded that “*Private behaviors and public policies that affect the health and nutrition of children have much greater effect on school enrollment and on eventual productivity than suggested by early literature methods.*” It is clear that smallstock have a significant part to play in this.

The relevance for poverty reduction and development policy is clear, the simple message being:

*Nutrition for Development:
Smallstock makes the difference*

- Promoting early childhood nutrition through an increased availability of livestock products, especially eggs and milk, can significantly enhance long-term cognitive development and school performance, especially in children with multiple nutritional deficits.
- Improved economic performance is linked to improved education.
- The promotion and development of smallstock keeping, and greater consumption of smallstock products need to be considered as an integral component of overall development policy.

All it takes is
an Egg and a Glass



The difference between malnutrition and a fair nutrition can be as little as an egg or a glass of milk a day.
[From a drawing by Gareth Bath]

The May 2004 ‘Copenhagen Consensus’ of eminent economists, concluded that among a lengthy list of interventions to meet the world’s development challenges, nutrition interventions have among the highest returns.

¹ Alderman, H., Behrman, J. Lavy, V. and Menon, R. (1997). Child nutrition, child health, and school enrolment. Policy Research Working Paper 1700. World Bank, Washington, D.C. Available at: <http://ideas.repec.org/p/wbk/wbrwps/1700.html>.

3.2 The Need for Background Information

The target audiences for development-oriented research are ultimately those individuals and institutions working with poor in developing countries. The issues discussed above in relation to the importance of smallstock, emphasize the need for a holistic approach to the dissemination of information. Similarly, nutrition-health interactions need to be considered alongside discussions of livestock health. It is therefore important, if not critical, for the dissemination of research outputs to be accompanied by sufficient background information to enable the potential target audience to fully understand the significance of the information. Much of this critical background information is available from text books and other references sources, including academic journals –largely unavailable to the target audience.

3.3 The Information Gap and Issues of Copyright

The Smallstock in Development toolbox includes electronic versions of a range of outputs derived from smallstock research projects, fact-sheets, research papers and reports, together with published manuals, and reports from international and local organisations, and NGOs. Cited references and material for further reading were included within the toolbox itself when available, whilst hyperlinks provide access to additional sources on the web where relevant.

The delivery of development information, including livestock-related material, is traditionally in the format of books, reports and similar paper format, but this all initially created in electronic format. Published information, in either hard copy or electronic format, is most easily available in the developed world and generally more difficult to come by elsewhere. This gap between the information-rich and the information-poor, both within countries (the elite and the disadvantaged within countries) and between countries (rich and poor countries) is growing. In contrast to paper copy, information freely available in electronic format via the web is potentially the easiest to access.

The material that is most difficult to access is that published in academic journals, many of which are not easily available, and if available are generally restricted to an academic environment. The limitations imposed by publishers' copyright were found in many cases to be detrimental to the requirements for dissemination of development oriented research outputs. On the one hand, there is a well established need to publish peer-reviewed results in academic journals, and this system is integrated into operational environment of research institutions. However, on the other hand, the access to this material by potential users in a majority of developing countries is either severely limited or non-existent. As a direct result of copyright restrictions, many of the outputs from LPP and other research projects that were published in academic journals were not included on the CD-ROM, and are difficult to access via the web (but may be available for download via the LPP-online web site).

Despite the evident problems with access to electronic information in poorer regions, people and institutions everywhere increasingly seek access to this information and are working towards these goals. Many within developing countries view the Internet as an opportunity to gain access to knowledge and services from around the world in a way that would have been previously unimaginable. Internet kiosks, for example, mostly facilitating email, are increasingly common in many parts of Africa and Asia. Despite this, reliable access to the information content of the web remains poor, largely due to slow and unreliable telecommunications – a situation that in some areas is changing. However, the increasing numbers of computers and computer users provides significant potential for distribution of information via CD-ROM.

Copyright issues have to some extent been tackled by some of the major publishers, through

initiatives such as AGORA (Access to Global Online Research in Agriculture) and HINARI (Health Inter Network Access to Research Initiative). However, these and other similar initiatives largely benefit universities and other academic institutions, rather than those that most urgently require greater access to up-to-date information, for example those NGOs and other extension agencies working with poor livestock keepers.

3.4 *Appropriate Electronic Document Formats,*

Alongside html, the Adobe Acrobat pdf file format has become a de-facto standard for dissemination of documents in electronic format. The freely available Acrobat Reader enables anyone with access to a PC to read, either on-screen or printed, any material saved in pdf format. However, during the compilation of the Smallstock in Development CD-ROM, a number of issues were encountered that tend to act against the ease of use and information content of pdf documents.

Password Protection

Password protection is an optional component of Acrobat pdf files. Inappropriate use of password protection in Acrobat can potentially render the document unusable to anyone without the password. Whilst this extreme case (encryption and requiring a password to open the file) is rarely encountered, it is common to find password security settings that prevent editing (which requires the full version of Acrobat, not just the Acrobat Reader), printing, and most importantly selecting text and graphics (and copying them into the clipboard). There are two main problems arising from this form of password protection:

1. The use of password security settings that prevents a user from selecting and copying text or diagrams will create significant extra work for anyone needing to use parts of a document and adapt them for local situations, for example in developing training materials. In practice, this may also prevent the use of these materials.
2. Password protection effectively prevents the indexing of PDF files by search engines.

The Smallstock in Development CD-ROM includes a full-text search engine that uses an index of all words in both html and pdf files. Password protected pdf files were not indexed and therefore can not be searched on the CD.

Scanned PDF files

For documents that no longer exist in the original electronic format, a scanned copy can be converted to pdf format. Whilst this does make the material available, the results are often poor when viewed on-screen or printed, and the file sizes may be approximately 20 times the size of the originals. This increased size means that far fewer documents can be included on a CD, whilst at the same time making them difficult or impossible to download from the Internet over slow and unreliable connections in many developing countries. The absence of text also means that the material can not be indexed and included in a full-text search of the CD.

This problem can be overcome by optical character recognition (OCR) and in a number of cases this was carried out for the Smallstock in Development CD-ROM.