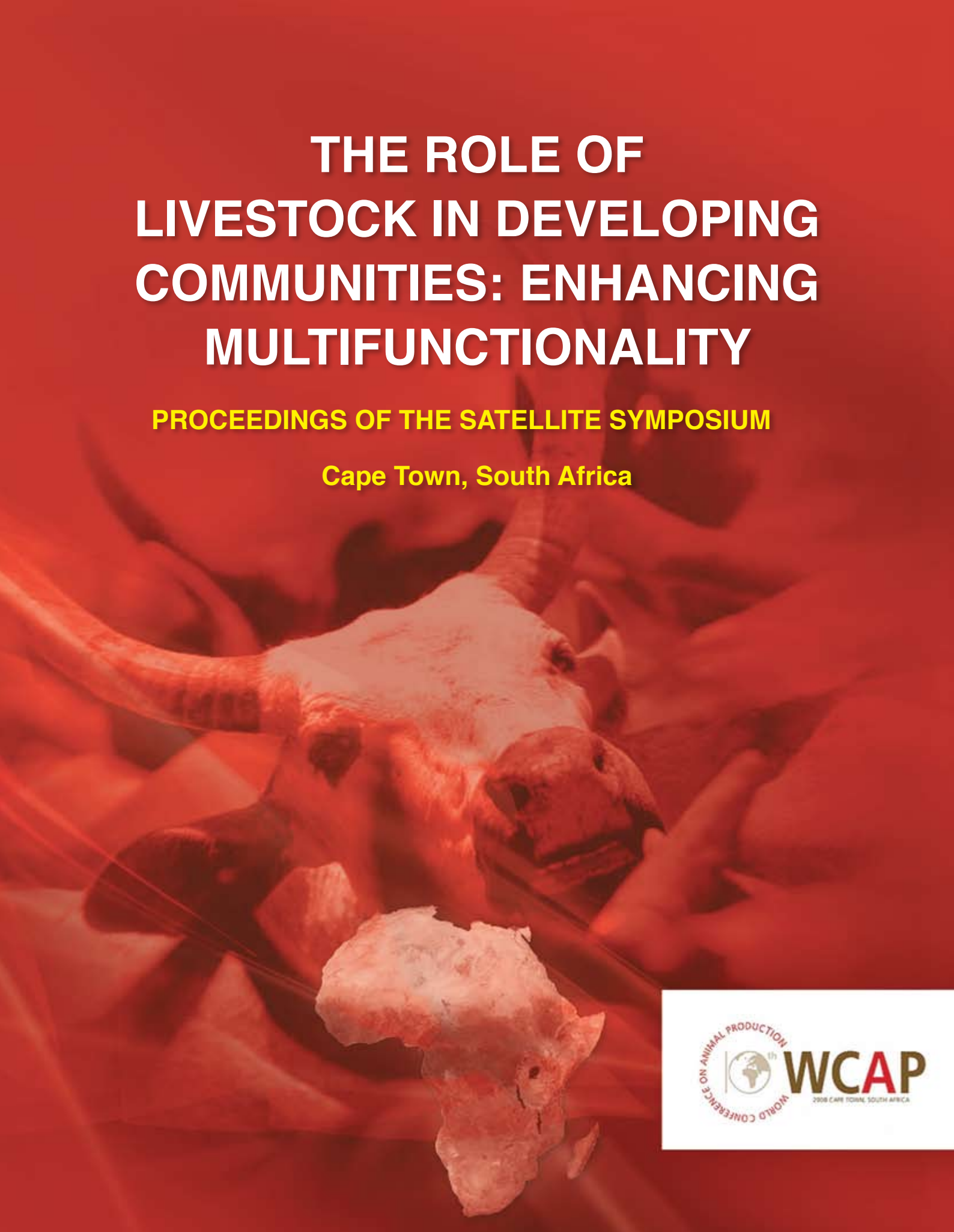
THE ROLE OF LIVESTOCK IN DEVELOPING COMMUNITIES: ENHANCING MULTIFUNCTIONALITY

PROCEEDINGS OF THE SATELLITE SYMPOSIUM

Cape Town, South Africa



Editors: Prof Frans Swanepoel • Prof Aldo Stroebel • Dr Siboniso Moyo

UNIVERSITEIT VAN DIE VRYSTAAT
UNIVERSITY OF THE FREE STATE
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ILRI
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Editors

Prof Frans Swanepoel: University of the Free State, South Africa

Prof Aldo Stroebel: University of the Free State, South Africa

Dr Siboniso Moyo: ILRI, Mozambique

Assisted by

Prof Johan van Rooyen: University of Pretoria ABSA Chair in AgriBusiness Management, South Africa

Lise Kriel: Researcher, Directorate Research Development, University of the Free State, South Africa

Dr Canagasaby Devendra: Malaysia

Prof Piet Wilke: Emeritus Professor, University of the Free State, South Africa

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Dr Siboniso Moyo: ILRI, Mozambique – Co-chairperson

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Prof Akke van der Zijpp: Wageningen University and Research Centre, The Netherlands

Dr Canagasaby Devendra: Malaysia

Prof Aldo Stroebel: University of the Free State, South Africa

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Claudine Macaskill: University of the Free State, South Africa

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Foreword

This Proceedings is the product of a Satellite Symposium on the Role of Livestock in Developing Communities: Enhancing Munltifunctionality held as part of the 10th World Conference on Animal Production in Cape Town, November 2008.

The Symposium, jointly organized by the University of the Free State (UFS) and the International Livestock Research Institute (ILRI) aimed to stimulate critical thinking on the role of livestock in livelihood strategies for the poor in the developing world as a contribution to address the Millennium Development Goals (MDGs). The livestock sector in developing countries contributes more than 33% to agricultural Gross Domestic Product (GDP), and is one of the fastest growing agricultural sub-sectors.

The livestock sector has been experiencing what has been coined the "Livestock Revolution". Population growth, urbanization, and most importantly, increasing income have resulted in a rapid increase in demand for livestock products, which is likely to continue well into the future. This growth of the livestock sector presents both enormous opportunities and challenges. This Proceedings therefore comes at an opportune time for both policy makers and practitioners in developing countries, and the international community. Livestock is a major contributor to food and nutrition security, and serves as an important source of livelihood for nearly 1 billion poor people in developing countries. Its importance in attaining the MDGs should therefore not be underestimated.

This Proceedings will be supplemented by a forthcoming book to be published soon. We are confident that the Proceedings together with the book will assist in generating renewed interest in the livestock sector. The book aims to provide critical information and knowledge on the importance of livestock in the global effort to alleviate poverty and promote human health. It will describe and evaluate case studies, examine theoretical frameworks, and discuss key global policy development issues, challenges, and constraints related to smallholder livestock production systems around the globe. The book is written for academic professionals, industry experts, government officials and other scholars interested in the facts and issues concerning the contribution of livestock to the social and economic progress of developing countries.

This publication contains the abstracts of the papers presented at the Satellite Symposium, supported by the discussions and concomitant analysis by the facilitators, as well as the additional information provided by the rapporteurs. The presentations are available at www.ufs.ac.za/wcapsatellite

The Editors would like to acknowledge, on behalf of the participants, the valuable support and contribution from the sponsors, as well as of the WCAP Organising Committee, in particular the Conference President, Prof Norman Casey from the University of Pretoria, South Africa for the realisation of this Symposium.

A short overview note: in search of a paradigm?

Author: J van Rooyen

Livestock systems are the largest land-use activity on earth (Herrero et al, p. 10), while global livestock production is challenged to double by 2020. A central focus to this sector is to ensure that benefits – in particular to small holders – are reaped from this 'livestock revolution' (Burrow, p. 18) in a 'sustainable' manner and by doing this, to give good effect to the 'multifunctional' nature of livestock in developing communities. Seventy percent of people living in extreme poverty are located in rural areas of developing countries. Despite their production potential, small-scale rural producers (SPR's) confront serious constraints in profiting from their resources due to lack of basic infrastructure, limited access to services for production, finance and business development and limited ability to influence favourable policy. Together with the background paper, the keynote address provided an excellent focus to this symposium, setting out the trends, issues and challenges concerning the multifunctionality of livestock for developing communities.

Various themes focussed the proceedings of the satellite symposium. These included aspects such as the role of development projects; gender equality, power relationships, distributional issues and empowerment; livestock production and the environment; food, nutrition and health; risk factors; intensification and access to supply chains; sustainability; and poverty alleviation.

Contributions all supported the notion that livestock production generally fulfils a multipurpose function in developing environments, ranging from:

- an economic perspective – livestock contribute to food supply and cash income, to traction and fertiliser and to a valuable asset portfolio and investment opportunity;
- a social viewpoint – status, power relationships, gender balance and distribution of benefits are relevant when livestock's contribution is analysed; In East Africa, where the private sector has not yet recognised the importance of research, increased cooperation between the public and private sectors was necessary in the development of solutions. Not enough is known about knowledge transfer, including appropriate access, packaging and delivery to different partners (eg. private sector, farmers and researchers). The real knowledge needs of different stakeholders must also be investigated, as also the different methods of knowledge acquisition used by them;
- the natural environment is increasingly relevant, because livestock owners are expected to fulfil an important stewardship role in 'wise' resource utilisation, while livestock production is often also considered as a 'high-cost, natural resources intensive' food production system, requiring energy inputs for both animal feed and human food production – a double energy dose therefore with 'high carbon footprint' implications. Environmental management systems (EMS) are methodical approaches to organising the planning, implementation and review of the impact on the environment using a "plan, act, monitor and review" cycle so called adaptive management.

The many roles of livestock in developing communities, the issue of diversity and how to deal with it and possible conflicts in this context, clearly comes into question – with this also the choices of intervention mechanisms and appropriate development strategies. This all leads to a central question that must be considered critically in context of the topic of the symposium, viz, "does the current livestock development paradigm provide for the necessary understanding and scope to enhance such diversity and multifunctionality in developing communities?" Research and development needs must originate from the community, and community members must drive the research process. Researchers must be sensitive to this and develop the necessary skills to work with farmers.

Multifunctionality must be considered as an important focus for the design of 'development projects that can make a difference'. The keynote address by Pell et al explored ways how to include such considerations and various critical components were identified, in a systems context, to ensure that sustainability is sufficiently considered. This paper, together with various panel inputs on the relevant cross-cutting themes and the working group contributions, indeed provided an intelligent framework to explore the validity of the current paradigm. Some notable viewpoints from the symposium are referenced briefly:

Pell et al, p. 8: "Sustainable development, the goal of almost all poverty alleviation projects, is seldom achieved. Key to the success of this endeavour is refocusing the mandates and efforts of institutions involved in development to ensure that the development dialogue leads to innovative processes and reordering of priorities." Whose priorities and how do we achieve successful implementation of these useful ideas?

Waters-Bayer & Letty, p. 10: "Despite years of gender sensitisation ... the role of women in livestock production and in marketing of animals and their products continues to be underestimated." Why does this continue? Are there not sufficient incentives built into support interventions to activate the required change?

Herrero et al, p. 10: "A balanced discussion of the beneficial and negative impacts of livestock on livelihoods and the environment ... is needed. Finding a balance is in understanding where these impacts occur." Also which generations will benefit or pay the price? I.e. inter-temporal considerations as well as intra-temporal should also be considered.

Facilitated discussion on cross-cutting themes, p. 12: "The challenge of reducing the (negative) impact of animal production on global warming ... has not yet received enough attention or funding." Clearly an issue of concern and for the research and development agenda of national and in particular international agencies.

Oelofse et al, p 12: "The prevalence of malnutrition in the developing world remains high amid numerous international and local efforts to alleviate this burden … in this quest the interface between food, nutrition and health has become increasingly important." Livestock products can make an important contribution at all levels and household types, but what interventions to make – where and when – remains a major challenge.

D'Haese et al, p. 14: "Keeping livestock is … an important way for poor people to diversify their livelihoods. It is a way of ex-ante risk management, which is a deliberate household strategy to anticipate failures in crop yields or other income streams." How can livestock income be generated to be a sustainable income-generating activity to these households?

Van der Zijpp et al, p. 16: "Why does increased demand (for livestock products) not easily transfer into incentives for small farmers?" The understanding of and mechanisms to offset the risks faced by these livestock holders and their household economies is required as an integral component of any project intervention.

Facilitated discussion on cross-cutting themes, p. 12: "Most small-scale farmers fail to take up technologies … because they do not have any economic incentive to do so … the challenge is not only to transfer, but to develop appropriate technologies to transfer." Technologies that focus on the diverse needs of particular types of livestock farming situations are clearly required.

From this and the many other, often pessimistic opinions voiced during the symposium, the need for a comprehensive rethink of the current paradigm is compelling – too many gaps; too much ambiguity; too many recorded failed efforts!

To my thinking one set of considerations that was (arguably) omitted or underemphasised as a cross-cutting theme, was that of an 'institutional-economic' perspective on the diverse roles and positions of livestock in the livelihood function of developing communities. Without this knowledge, a paradigm which includes a development path trajectory to guide effective development support and project type interventions, are not fully constructed yet for the developing livestock sector. To illustrate this view point, some aspects are briefly elaborated upon below.

A household economics perspective and livestock development

Poor rural households are continuously involved in a struggle to make ends meet; food security and family livelihood expenses being some of the major priorities. Livestock production could play a vital role in this context: directly through food provision, for example meat, milk, eggs; and also indirectly by strengthening the household-economy through the provision of draught power, organic fertiliser and fuel, hides, commercial sales of animals and animal products and also through occasional sales to meet particular community and household needs such as school fees, celebrations, funerals, marriages, etc. The real contribution of many of these livestock products are however generally not accurately valued by the monetary yardstick alone.

In this context the design of livestock commercialisation projects should be considered carefully: both from a sustainable business view; and also in context of the wider set of parameters driving the household economic system. Market prices alone will seldom provide realistic project value indicators. Opportunity costs, social cost- benefit analysis, shadow prices and hedonistic pricing models should be considered to determine potential impacts of project interventions in general and more particularly on the participating households and their real incentives to collaborate.

An initiative to enhance livestock production in developing communities could, for example, be to reduce infant livestock mortality – a very high opportunity cost factor in cattle, sheep and goat farming. The impact on the various households in the target community may however differ considerably, with certain households in a better position to benefit directly by expanding their herds, while others are made worse off due to increased pressure on the common grazing resources. Environmental impacts related to subsequent increased numbers vis-à-vis grazing rates and veldt types have to be considered. Marketing systems must also be introduced to enable the commercialisation of the increased off-take. Distributional impacts, in particular on gender positions, should also be considered when such interventions are designed/appraised/ evaluated.

The wider impact at community level must also be traced. If sound knowledge of the workings of the applicable 'livestock typology' and the relationship with participating households exists, a development trajectory for these different household types within this broader typology can be considered. The linkup between typology and household is thus important to plan successful project interventions. The development of sustainability indicators for specifically assessing the contribution of animal production to the quality of life of communities needed to be investigated.

Diversity, typologies and farming types

In a recent study on the role of 'small stock farming' in the rural based Leliefontein community in the Northern Cape province of South Africa, Salome Modiselle (2005), after living in the community for a considerable time during her research, concluded that diversity in the roles of livestock at the household level required the recognition of a range of farming types, in order to design realistic and more effective development intervention strategies. The construction of a livestock farming typology, describing at least six different types of livestock farming/holding models in operation in the community and ranging from sustained commercial production to 'status herding' and food security, was considered necessary in this community to give effect to the required support and developmental interventions. This institutional innovation departed radically from a 'Taylorian type' extension strategy, where 'one-fits-all' technological solutions were favoured by the government extension agencies.

A similar 'typology development approach' was proposed and implemented in the Eastern Cape wool growers project, where shearing sheds were, as a result, successfully extended and converted into livestock community mobilising and support centres, with good effect, to cater for the multifunctional nature of livestock production in the target communities (D'Haese et al, p. 14).

The 'tragedy of the commons'?

Grazing of livestock in many rural areas are on communally owned lands. The "tragedy of the commons" is well known, with a generalised application to 'open access' communal grazing resources, where ecologically determined carrying capacity rates are transgressed. This, it is argued, is because the marginal cost of such 'over' grazing to the individual livestock owner on the commons does not fully reflect the marginal cost to the community at large, resulting in sustained overgrazing incentives.

Reality, however, is less clear. In situations of strong social cohesion, where access to communal grazing resources is managed, sound grazing and livestock husbandry practices could be implemented, with good sustainable results. Livestock improvement schemes introduced under such regimes succeeded in general and resulted in the evenly distributed improvement of participants' livelihoods.

In other cases however, uneven power relations could exploit unclear/unspecified/open type communal grazing arrangements on the commons. This led to opportunistic behaviour and the skewed distribution of benefits to such 'powerful elites' in the community.

In a study in the (now) Limpopo province of South Africa (Vink, 1986), where the highly skew livestock ownership status and distribution of resultant benefits in communal grazing areas was investigated, it was concluded that the "tragedy of the commons" existed, with 'overgrazing' of the commons apparent over a broad base. This situation was found to be the direct result of the "tragedy of the chiefs and their cronies", i.e. powerful groups which exploited the common grazing resources, with ever increasing livestock herds grazing in an open access regime with no enforceable grazing and animal husbandry management arrangements. This resulted in the sustained over exploitation of the natural resource base of the community, which rendered livestock improvement schemes environmentally unsustainable, while also largely inequitable and beneficial to only a small, powerful minority.

Understanding institutional structure and the impact on economic decision-making must be viewed as an important parameter in the design of livestock development interventions. In addition, appropriate policy frameworks, supportive institutions and "relevant" science is required to ensure success (Stroebel, 2004; Nthakheni, 2007). Ensuring the success of individual projects and sustainable development involves a number of issues:

- Clear mandates and efforts of institutions participating in the research and development (R&D)
- Clear identification of the bio-physical environment, problems, needs and priorities
- Ensuring effective development dialogue and innovative processes between all partners and also communities
- Application of interdisciplinary R&D and system perspectives
- Measurement of progress and impacts, and
- Striving continuously towards shared goals and sustainable development.

The comprehensive review of the current "livestock in developing communities" paradigm is now required. This satellite symposium provided the opportunity for a unique knowledge network to share experiences and ideas on how to enhance multifunctionality in livestock development. The comprehensive understanding of this concept must be viewed as one of the cornerstones to 'build' such a new paradigm and in doing so, to provide the urgently needed intellectual framework for dealing with the many formidable challenges facing this important sector in most developing environments.

Discussion of presentations

Presentations are available at www.ufs.ac.za/wcapsatellite

Invited keynote

What works, what doesn't and why: Development projects that make a difference

Authors: A N Pell (presenter), A Stroebel & P Kristjanson

Abstract: "Sustainable development", the goal of almost all poverty alleviation projects, is seldom achieved. There are many reasons for this failure: 1) assessing the sustainability of a project requires a longer time horizon than is feasible in most projects, 2) lack of clarity in what is meant by either "sustainable" or "development", 3) exclusion of people and institutions essential to addressing the problem, and 4) lack of consideration of aspects of the problems necessary for comprehensive solutions and focus on factors that are unimportant. In this paper, we explore with case studies how to ensure that the critical components of a system are identified and addressed and how the people whose lives should be affected by development programmes not only are included but also are given decision-making power. Key to the success of this endeavour is refocusing the mandates and efforts of institutions involved in development to ensure that the development dialogue leads to innovative processes and reordering of priorities. Our examples are drawn from livestock projects, but reflect a systems approach so that we consider issues from the local to the international level and along the biophysical and socio-economic continuum.

Open discussion

1. The presenter encouraged participants to think outside conventional approaches.

2. Bio-fuel crops clearly affect livestock production in all areas (i.e., both wet and dry).

3. In East Africa, where the private sector has not yet recognised the importance of research, the challenge remains to gain cooperation between the public and private sectors in the development of solutions.

    - The double challenge posed by the existence of a weak private sector and a weak public sector in many African countries is acknowledged. However, projects are increasingly strengthening cooperation between the two sectors (for example, the sale of small packages of fertiliser to small-scale farmers, as opposed to bulk sales which these farmers cannot readily afford).
    - This remains a policy issue, which research must address.
    - Conversations between private and public sectors must be initiated long before products/results are available. Lessons from 'best practice' in this public/private sector relationship must be investigated.

4. Duplication of research on the same topic (i.e. waste of resources) must be replaced by the active exchange of information (instead of parallel/similar research reaching the same results/conclusions).

    - Information is now being published online (e.g. on blogs), but not everybody can (or do) access this.
    - A central, accessible repository of all research and all researchers per topic is needed.
    - A mechanism which prevents the publication of many papers describing the same results is needed.

5. Knowledge transfer seems absent in the presentation. The appropriate packaging and delivery (accessibility) of knowledge to different partners (e.g. private sector vs farmer vs researcher) remains a challenge.

    - The real knowledge needs of different stakeholders (i.e. not 'what we think they need') must be investigated, as well as the different methods of knowledge acquisition used by such stakeholders.

6. Research and development needs must be derived from the community. Community members must become research facilities and must drive the research process (i.e. 'put the community behind the steering wheel').

    - However, researchers do not necessarily have the skills required to do this. The challenge here is to discover how researchers can acquire these skills.

7. The presentation is applicable to both developed and developing countries, because similar farming transitions and similar knowledge needs exist in both worlds.

8. The application of the 'tree model' explained in the presentation in different learning communities (in both in developed and developing countries) may be challenging, especially where colleagues are more discipline-oriented and/or less familiar/comfortable with the use of systems approaches.

    - One solution is to help students with separate disciplinary perspectives (i.e. with little in common) to work and learn together in groups. This provides excellent interdisciplinary training and students who have conversations learn from each other in a way that they would not have otherwise.
    - Another solution id to constitute multidisciplinary study-leading teams (committees) to advise students (instead of single supervisors, or a group from within a single discipline).

9. Sustainability is threatened when the objectives of different stakeholders (researchers, funders, community members, public and private sector organisations etc.) are not aligned. The challenge is to facilitate a shared goal among partners, to enable sustainability.

    - This aspect is also affected by the short-term funding of projects with long-term goals.

10. Ensuring relevant decision-making (by identifying and appropriately informing the 'decision-makers') is a further challenge.

11. Even though understanding the needs, aspirations, knowledge and requirements of a target group (be it the farmer or policy-maker) takes a lot of time and effort, it remains critically important to research.

12. Community members should not only be included in problem identification. There indigenous knowledge should also be actively utilised in identifying solutions. i.e. instead of driving new technologies, first try to identify local technologies to solve local problems.

13. Sustainability is continuing development. Grassroots problems must be addressed through continuing development of the community's ability to study their own problems and to assist each other.

    - The development of sustainability indicators for specifically the contribution of animal production to the quality of life of communities must be investigated.

14. In terms of the noted challenges and solutions, we must consider who benefits within this development community (i.e. the researcher, the farmer, the animal or the funder). This begs the question: who holds the power, and do they maintain an altruistic attitude or a capitalist attitude?

Panel discussion on cross-cutting themes

Promoting gender equality and empowering women through livestock

Authors: A Waters-Bayer (presenter) & B Letty

Abstract: Despite years of gender sensitisation in many research and extension organisations, the role of women in livestock production and in marketing of animals and their products continues to be underestimated. Some encouraging projects do focus on women livestock-keepers, but most projects still tend to assume that the major actors in livestock (especially ruminant) systems are men. By making this assumption, such projects often strengthen the position of men versus women in households and communities, and may even deprive women of traditional realms of responsibility, social recognition and income.

We examine key issues that impact on gender equality when livestock-related interventions are made in the name of development – issues related to roles and responsibilities (both perceived and real), rights of ownership over livestock, access to livestock services and markets, and decision-making powers regarding inputs and outputs of livestock production and resulting income. We highlight initiatives that lead to greater equality between the genders. These entail various forms of empowering women, such as through recognising and stimulating their innovativeness in livestock-keeping and enhancing their ability to organise themselves so as to strengthen their negotiating position and access to benefits. We pay particular attention to the multifunctional and changing roles of livestock at household level, especially in improving the lives of women in marginalised groups, such as pastoralists, the rural and urban poor and families affected by HIV/AIDS.

Livestock, livelihoods and the environment: Finding the balance

Authors: M Herrero, P Gerber, P Lecomte, A Ayantunde, A J van der Zijpp (presenter), A Notenbaert, J van de Steeg & P K Thornton

Abstract: Livestock play diverse roles in the livelihoods of people around the world. They are important providers of food for urban and rural consumers and they are an important source of income, employment and traction, especially for large numbers of poor people in the developing world. Livestock systems are the largest land use system on Earth and are organised in a varied array of production systems differing in intensification level. Livestock can consume substantial amounts of natural resources (i.e. land, water, feed, energy) in the process of meeting the increasing demand for livestock products by the growing and more affluent human population. Some systems can also emit significant amounts of greenhouse gases.

However, livestock are not bad everywhere. There are places where livestock can lead to severe environmental degradation (i.e. land conversion, nutrient loading) or where livestock can be an inefficient way of utilising existing natural resources. However, in other parts, the positive roles of livestock in the livelihoods of poor people outweigh the environmental problems caused in many regions of the world, especially in marginal areas where alternative livelihood options do not exist. This paper tries to provide a balanced discussion of the beneficial and negative impacts of livestock on livelihoods and the environment. It also argues that a large part of finding a balance is in understanding where these impacts occur. This is crucial for designing a coherent livestock research and development agenda for providing food, livelihood options and maintaining ecosystems services around the world.

Food, nutrition and health: Its relevance in the developing world

Authors: A Oelofse (presenter), A Minnaar & G Gericke

Abstract: The prevalence of malnutrition in the developing world remains high amidst numerous international and local efforts to alleviate this burden. Probably the most important of these are the Millennium Development Goals (MDG). To achieve these goals an array of projects across the developing nations are undertaken. In this quest the interface between food, nutrition and health has become increasingly important. The study of food, its importance to provide essential nutrients and its subsequent impact on health has been receiving increasing attention as opposed to the different disciplines in isolation. Many studies have been conducted focussing on single nutrients and its potential to improve nutritional status and health. However, the concept of whole food and its collective contribution to the nutritional and health needs of especially communities from the developing world has become increasingly important. In addition the assessment of health benefit has become the norm to assist policy makers in decision making regarding national and international food and nutrition policy.

Food and nutrition for improved health and well being in developing populations poses much different and often more difficult challenges than in a developed setting. In these populations food needs to provide very basic though essential nutrition to marginalised populations to address micronutrient (Vit. A, iron, iodine and zinc), but often also protein and energy needs. This as well as the monitoring and assessment of health benefit needs to be done in the face of many challenges in the delivery of both food and nutrients Some of these challenges include the co-existence of obesity and chronic disease e.g. hypertension as well as infectious diseases like TB and HIV/AIDS. These circumstances are often exacerbated by civil war and unrest.

The paper will look at the role of food in providing essential nutrients to developing communities to address nutrition and health needs of these populations. It will also look at ways of addressing these deficiencies through different strategies and the potential health benefit it may hold.

Facilitated discussion

Facilitator: E Nesamvuni

1. Linking gender issues with small-stock production provides real pathways out of poverty.

    - The focus should be on women and their animals (small-stock, e.g. goats and poultry). These women small-stock farmers often want to move to larger animals; improving small-stock usage will therefore lead to larger stock usage.
    - Poultry is particularly relevant, since it is available everywhere. Many women in Ethiopia are dependent upon poultry and they utilise communal/shared ownership management systems.
    - The challenge remains as to how to move this type of farming forward for women.

2. There does not seem to be any research underway into payment for eco-services and into the costs of this for different (developed/developing) countries.

    - Research should establish/document who is benefiting from these payments through case studies in different countries and different situations (e.g. water harvesting; increasing biodiversity).
    - Bureaucracy and corruption remains a challenge.

3. Nutrition remains a challenge. Markets (consumers) dictate what farmers produce, and it is unreasonable to expect farmers to teach consumers about healthy eating habits. This should be the role of the government.

- This is very true from the perspective of the commercial farmer (i.e. production is driven by consumer demand). However, rural farmers are often community leaders and therefore have some power to impact the health of their own communities through their food production choices.

4. Some gaps remain in the existing innovation studies on women and livestock (animal husbandry).

   - The ideas and creativity (innovations) of women must be better recognised. Work is needed to motivate researchers' interest in this area of study. Women's innovations serve as an entry point (not a solution); the beginning of showing what farmers are doing and can do.

5. Small farmers are still inadequately equipped to move forward and to compete with large commercial farming. This remains an inequality issue (unequal access to knowledge, markets etc.). One solution could be for small farmers to work together in co-operatives to increase their power within the industry.

6. The challenge of reducing the impact of animal production on global warming (particularly in developing countries) has not yet received enough attention or funding. Further research is needed to develop methods for converting dung into bio-gas and to reduce emission of gas from animal bodies.

   - Science has made a fair effort to reduce methane gas emissions.
   - Some countries utilise financial incentive mechanisms to reduce methane production from ruminants (e.g. south east Asian farmers are paid to produce bio-gas instead of dumping manure in rivers). The question is, however, if this incentive system is sustainable (i.e. where does the money come from and how long will it be available?).

7. Researchers working on gender issues in agriculture must be cognisant of the fact that the empowerment of women in Africa must be accompanied by the empowerment of men. Disregarding the traditional customs of the people will lead to conflict within the community.

   - This highlights that traditional customs (beliefs, traditions, ideology) are critical to development and success if rural projects, an issue which has not been given enough attention to date. Traditions must be understood in order to effect change.
   - Researchers within the communities have indicated that traditions are sometimes no longer practiced. The impact of this must be understood.
   - There are also situations where traditional customs work blatantly against the wellbeing of women, e.g. where women-headed households are not allowed (by tradition) to plough, These women must convince a man to plough for them and then they have to share their crops with him. Research is needed to investigate how such customs could be changed to allow single women to farm independently and to feed their families.

8. Most small-scale farmers fail to take up technologies developed by research, often because they do not have any economic incentive to do so.

   - More conversation and information about technology transfer between researchers and farmers at community level is needed (since many farmers can devise appropriate ways to address this challenge which researchers cannot).
   - The challenge is not only transfer, but development of appropriate technologies to transfer; i.e. technologies that suit individual/family contexts.

9. Kenya has a large pastoral livestock system, but it remains challenging to engage women due to cultural and religious inhibitions (they include women in meetings, but they do not participate).

   - Sudan experiences similar challenges (where Sudanese women will not talk with non-Sudanese women). One solution is to hire educated Sudanese women to work in rural areas to develop the confidence of rural women. Within 5 years the rural women were willing to talk with both non-

Sudanese women and men. This illustrates the successful use of an approach based on the rural women's own contexts ('own terms').

Synthesis and conclusion

Presenter: A Freeman

The challenge

- The MDG challenge
  - Contribution of livestock to social and economic progress in ways that do not have adverse impact on the environment

- The complexity challenge - dealing with complex systems and processes
  - Business as usual will not work
  - Not just what but how to address complicated development and environmental challenges … the big issues; research gaps

Understand context and trade-offs

- Household asset situation
  - Resources (assets) and capabilities

- Contexts where they are using their assets
  - Bio-physical, environment, conflict
  - Delivery and support systems, input and output markets
  - Research, extension
  - Policies and institutions

- Understand decision making processes
  - Complex trade-offs
    - Income – nutrition
    - Gender differences
    - Environment-livelihood
    - GR technologies and micronutrients

How: deal with complexity

- Approaches, methods, and tools
  - Systems approaches, inter-disciplinary research and training
  - Mixed methods – relevance; setting priorities,
  - Gender analysis – deal with gender differences and inequality
  - Life cycle analysis, integrated approaches to understand food-livelihood-health linkages
  - GIS, spatial analysis – address system diversity

How: do we know whether we are making a difference

- Measuring outcomes and impact
  - Socio-economic
  - Bio-physical
  - Sustainability

- Monitoring and evaluation: processes and products
  - Learn what works, what does not work, why, under what context

Processes are important

- Not just what but why and how
- Investing in front end analysis
- Partnerships – research non-research
- Inclusive and participatory

Conclusions

- Understand context
- Targeting is important to deal with diversity and maximize impact
- Learn from outcomes (what and magnitude of impact) and processes (why and how)
- Inclusive, interdisciplinary, integrated approaches

Working group 1

Vulnerability and risk: Multiple roles of livestock in agrarian economies

Authors: M D'Haese, S Speelman & L D'Haese (presenter)

Abstract: Livestock is a key factor in African economies. Two case studies illustrate the main roles of livestock keeping in Africa: (a) a study in Burundi shows that households keep livestock as a management strategy to reduce vulnerability to risk of failure in future income streams; and (b) a study in South Africa explains how collective action in a farmers' association enables its members to keep sheep to generate additional income. Burundi is one of the poorest countries in Africa. Data was collected in villages in two provinces. Results confirm that households depend on subsistence agriculture to cover their daily food needs. Investment in livestock and its management are limited.

Keeping livestock is identified to be an important way for people to diversify their livelihoods. It is a way of ex-ante risk management, which is a deliberate household strategy to anticipate failures in crop yields or other income streams. The case of wool farmers' associations in South Africa illustrates how livestock keeping contributes to village development. Data was collected in three villages in the former Transkei area among members and non-member of the association. For its members, wool production has become a sustainable income generating activity. The farmers' association is found to successfully create market access and enhance production. The collective action in the association reduces the vulnerability of individual farmers in market arrangements.

Rapporteur's summary

Rapporteur: B Kruger

Definitions:

- Risks: shocks that households have to deal with and can include environmental, socio-economic and political

- Vulnerability: The ability/inability of a household or community to cope with it.
  - Vulnerability is difficult to measure

Question:

- Can livestock play a role in improving poor people's ability to cope with risk and reduce their vulnerability?

Two case studies:

- Burundi
  - Subsistence oriented livelihoods
  - Households with livestock and cash cropping less vulnerable
  - Not everybody is the same and in-depth analysis and understanding of household dynamics are needed before interventions.
  - Low productivity levels of livestock
  - Low uptake of technologies, e.g. veterinary medicines

- South Africa
  - More commercially oriented enterprises
  - Risks:
    - Investment risks: land reform process; bureaucracy; uncertainty; disinvestment
    - Supply Chain risks: quality; quantity and continuity of production – post settlement support needed
  - Strategic partner risk: Lack of strategic partners

Important issues

- Women's position in vulnerability
- Livestock not only cattle – goats, sheep, poultry, etc.
- Lack of security over land tenure: private ownership versus communal systems - "tragedy of the commons" vs. "tragedy of powerful people"
- Lack of collateral without title deeds
- Institution building in the communities needed (social capital)
- Maintaining flexibility and reciprocity in communities
- Links to markets to serve as incentives to increase uptake of technologies
- Role of "middle-men" in the marketing chain
- Government policies tend to favour cattle over other livestock
- Shrinking availability of land for livestock

Working group 2

Sustainable intensification: Wishful thinking or realistic prognosis?

Authors: A J van der Zijpp & H M J Udo

Abstract: The demand for livestock products is increasing as predicted by the Livestock Revolution. Sustainable intensification has been the solution to decrease poverty of smallholder farmers and provide more food at acceptable prices for a growing population. Why does increased demand not easily translate into incentives for small farmers? The response of poor farmers depends on the household resources and the context of their farming system.

The family situation, labour, land (fertility and water), feed and cash availability determine development. The context presents a wide range of issues: infrastructure and markets, services like extension, animal health, breeding, microcredit, feed access and farmers associations. They effect the management options of the smallholder. These options may be further effected by competition of smallholders, medium and large scale farmers and cheap imports. Poor farmers appreciate livestock as assets and for financial insurance and food. Market participation requires investment and changes the asset and insurance function of livestock. Livestock species vary in their contribution to income, investment needs and gender association. To assist poor farmers to offset the risks of market led production appropriate policies are needed linking resources with local/regional and national contexts.

Rapporteur's summary

Rapporteur: P Wilke

Intensification to decrease poverty

- Agricultural food production challenges: food reserves currently last for 50 days from 80 days a decade ago
- Diversify livestock production: in Lesotho dairy production linked to school feeding programmes; engage in selling different animal products
- Farmer innovation is often led by incentives example: drip irrigation in Lesotho where farmers innovation is driven by attractive income e.g. for marijuana, and ready market

Issues on sustainability

Institutional arrangements

- Processes that create working farmer institutions need be addressed
- How to facilitate process for developing quality products and related institutional support remains a bottleneck
- In many instances farmers do not own value adding facilities and are struggling to access them.
- Role of cooperatives need be enhanced so that benefits are accrued by members
- Facilitation for existing and new farmer associations needed; farmers need to take lead in organizing for markets

Farmer reward systems

- Informal marketing for animal products is prevalent. There is need for better marketing especially with improvements on packaging

- Small animal production at household with a huge potential e.g. pig rearing need be enhanced and supported by government

- Government's incentives needed to enhance management, marketing of animal products, and even for tourism
  - Moagi: (farmer from North West Province of South Africa) "If a cow give a farmer 20 litres, there is product 'flooding'". Government need to consider subsidies like in Europe and curb dumping of products in Africa

- Value chain participation for smallholders is poor resulting in marginal incomes for smallholders e.g. often researchers encourage production but not how to participate in the high end market segments
  - Example: Beef farmers get paid for animal carcass and not for other products (fourth quarter) which goes to abattoir operators
  - Women empowerment programmes need to involve men to minimize conflicts at household level

Constraints of intensification depending on context

- Enhanced value chain performance depends a farmer's situation; we often assume farmers want more of the same enterprise- the value of diversity of enterprise need to be further explored

- Assess constraints of intensification depends on the context e.g. when livestock faces challenges of diseases, droughts, etc.

- More efficient use of available resources is required

Demand and supply issues

- Government responsibilities and household resources are important. Are farmers producing more from the same resources or less?
  - Examples (David Muteti): in Uganda despite huge maize market in Southern Sudan farmers cannot produce enough and prices have shot up and now Ugandans cannot afford maize; Other examples: Goat and honey exports is overstretched.
  - On the other hand, often there is overproduction of banana, milk and the market is reliant on outsiders. Government need to encourage commodity marketing within communities rather than rely on outsiders.
  - Sometimes production is not in sufficient quantities to participate in markets effectively

Infrastructure:

- Impediment where government investment is low: road networks; abattoirs, refrigeration of vaccines (e.g. in Uganda)

- Also there are cases where many farmers cannot access abattoirs (e.g. in Sudan) due to animal quality issues.

- Animal production is also affected by:
  - Water access (milk is 80% water)
  - Electricity

Working group 3

Pathways from poverty through value chains and innovation

Author: H M Burrow (presenter)

Abstract: Developing supply chains that deliver to specifications of new or existing markets offers a way to ensure poor livestock farmers benefit from growth opportunities from the "Livestock Revolution". To develop such supply chains, several research and industry development issues must be addressed: 1) Proof of concept that livestock raised by poor farmers can meet the requirements of commercial domestic or international markets (to provide the confidence required by commercial investors); 2) Definition of production and marketing systems that can be targeted by the rural poor, ideally based on low input production systems or where commercial enterprises accept partial risk and/or funding of higher input production systems; 3) Capacity building of poor farmers focused on supply chain requirements, including profitability and productivity and continuous improvement and innovation; 4) Capacity building of commercial supply chain sectors so they can best utilise livestock delivered by poor farmers; 5) New win-win partnerships established across two or more segments of the supply chain (e.g. poor farmers and commercial feedlotters, processors and/or retailers); 6) Implementation of a value-based marketing system across supply chain segments, with value at each stage reflecting the product's ultimate value at consumer level; 7) Possible market segmentation based on consumer demand; and 8) Measurable and agreed performance indicators across all sectors of the supply chain. Each of these issues will be discussed by example.

Rapporteur's summary

Rapporteur: J McDermott

Value Chains - Considerations

ACTORS – who are they, what do they do, what capacity do they need

- Capacity building
- Knowledge management, networking, sharing of information across different areas and sectors

WHO BENEFITS AND HOW

- Farmer's income that can be used for multiple purposes; better understanding of their own enterprises and market demands (costs and budgets)
- Buyers (understanding buyer demands)
- What are the returns from projects (is this the most cost-effective approach)?
- Role of livestock (multi-functionality versus commercial specialization depending on the system)

"GOVERNANCE" / MANAGEMENT – how are the value chains regulated and managed

- Who decides on priorities (community choice)
- Regulations/Policies that address risks and meet needs of different actors (enabling) – pig slaughtering in Zimbabwe; informal milk markets; Beef in SA – regulators brought into discussion (bovine measles)

IMPROVEMENTS – along the value chain

- Competitiveness/price
- Niche (e.g. weaners versus mature animals)
- Quality – taste/tenderness
- Regular and sufficient supply
- Reducing risks (forward contracting)
- Cutting costs – on-farm/community auctions

INNOVATION SYSTEMS – functions / linkages

- Systematic approach and assessment taking into account the context; monitoring, evaluation (term of view - short, medium, long and how is this handled)
- Consider new arrangements - partnerships with private sector or alternative input supply systems identifying new actors and how they are linked to the system (land banks)
- Testing/Experimentation - Build capacity for decision making, up-scaling and out-scaling (return (impact assessment) on investments from projects)

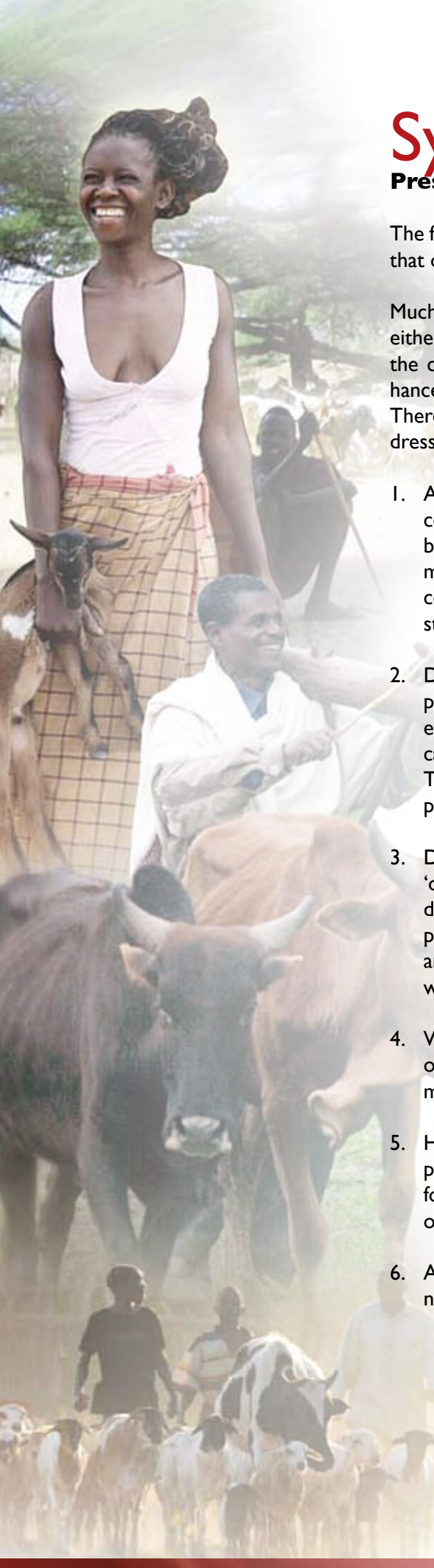
Value Chains - Lessons

DON'Ts – what should we stop / not repeat

- Build a slaughterhouse away from the market
- Sole focus on technical issues (these will follow)
- Conduct value chain research and development which is not driven by the farmers' interests (ownership) - get farmers to negotiate on what will be the process
- Try a new concept (dual purpose dairy goat) without considering local context (goat milk not demanded)

DOs - what should we try again or adapt and improve upon

- Link to existing parts of the chain
- Share information with others (partnership and cooperation) – locations and different value chains
- Think about institutions and management
- Be patient - it takes time to build capacity and ownership
- Target with an understanding of where there is market opportunities



Symposium conclusion

Presenter: J van Rooyen

The focus of the symposium introduced a highly relevant but complex matter, that of the roles and impacts of livestock in developing communities.

Much- new and old- knowledge has been shared; we are now compelled to either challenge or confirm the conventional wisdom- are we satisfied with the current paradigm or are we still in search of a 'new' paradigm to 'enhance multifunctionalities' in the livestock sector in developing communities? There are at least six particular challenges or questions that we must address:

1. Are we sure that we really understand the role of livestock in such communities? Cognisant of the fact that we need to double production by 2020 to serve food security needs, it is clear that we have to move into commercialisation, but what about all the other (non-commercial) functions and roles of livestock in a particular household striving to survive?

2. Do we really know what we are doing when we advise others i.e. poor rural / urban households with livestock to allocate water, land and energy? Do we understand what happens at household level (gender, cash flow); who are the beneficiaries? Who are the possible losers? The challenge lies in understanding these impacts properly in order to provide good advice.

3. Do we assume that all challenges are the same to all livestock holders- a 'one –for – all' system? We should clearly not and need a typology (to describe the various livestock holding/farming types operative in a particular environment), first describing the problem(s) appropriately and then describing the possible solutions and impacts for each type within a typology.

4. Where is the challenge located when it comes to gender? Problems are often associated with the dominating role of men; thus we must involve men in dealing with gender issues in the livestock sector.

5. How do we measure the impact of livestock holding and production practises on the environment, e.g. how do we measure the 'carbon footprint'? We must develop appropriate protocols and measures in order to understand the environmental impacts.

6. An important challenge remaining is to find the balance between health, nutrition, household welfare, environment and animal production.

Presenter: C Devendra

1. One important suggestion today which we have not yet done successfully is to engage (spend time) with the community, to learn from them and to teach them what we have learned.

2. Furthermore, we need to be realistic about what science can do and what it cannot do.

3. One aspect which we should discuss further (which was not discussed today) is the increased risk in terms of climate change (e.g. larger extremes in rainfall). Could research help us understand how farmers in the arid and semi-arid areas will deal with this challenge?

4. We seem to have more challenges than successes. Why? Because we are anxious to find ideas in isolated conditions and not looking at the holistic picture. We cannot just look at livestock; we must engage with health issues, feeding issues, marketing issues and more. One solution is to start with the community: to identify all the success stories and to learn from them.

5. The biggest challenge is usually to secure adequate, long-term research funding. Short-term research is just not as effective.

6. There is a clear opportunity for a new generation of trained agricultural scientists to address the needs of smallholder farmers. We must revisit the education curricula to make it more appropriate to the smallholder farmer's context.

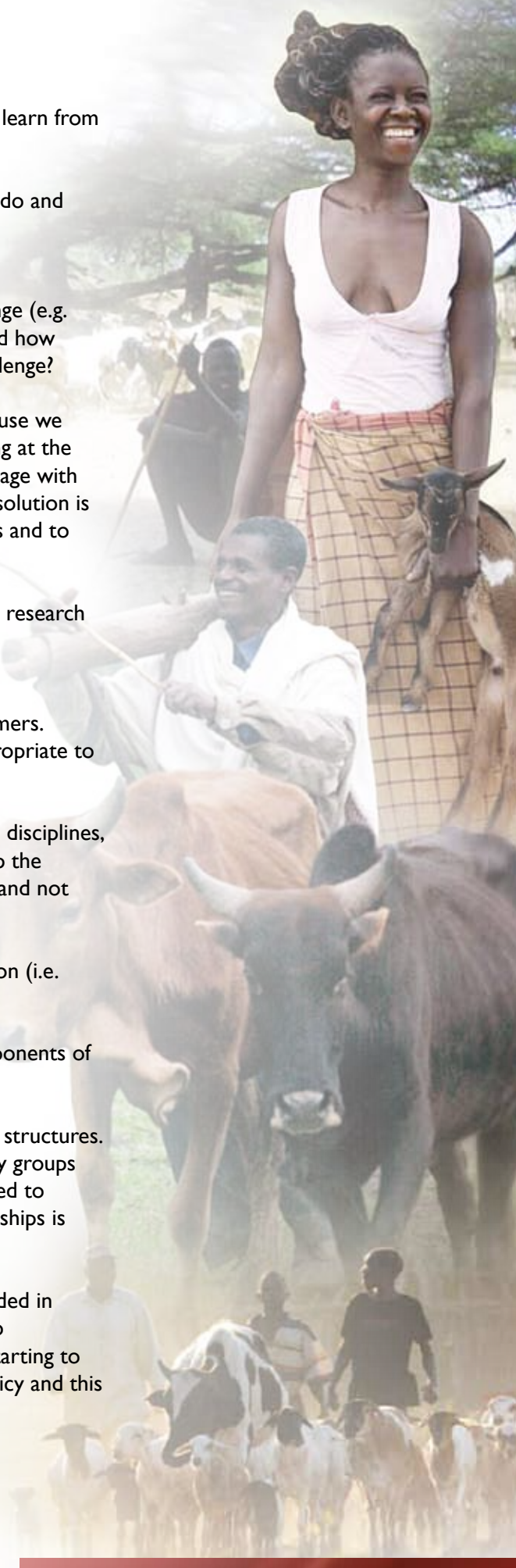
7. Agricultural research must establish links with other relevant disciplines, such as climatology and markets (economics). It does not help the farmer to buy more cattle now if there is not enough rainfall and not adequate access to the consumer market in a year's time.

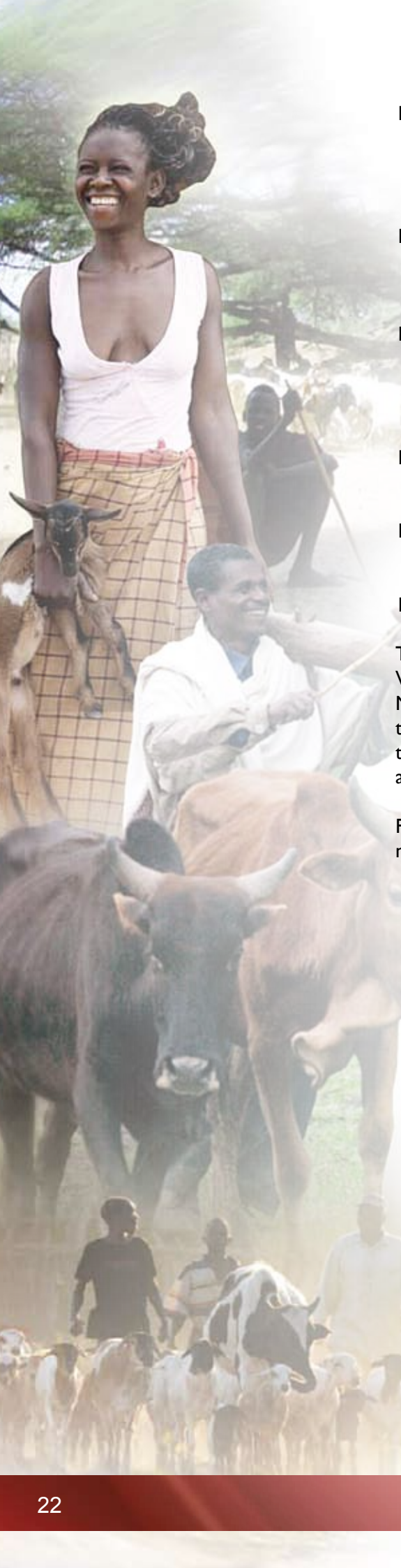
8. We must consider the balance between research and extension (i.e. should be focus more on technology transfer?).

9. A better understanding of the overwhelming amount of components of the value chain is required.

10. Rural growth and development requires better organisational structures. Self-help groups, key informants, co-operatives and community groups are some of the entrepreneurship vehicles which could be used to accelerate rural development. However, the quality of partnerships is more critical than the quality of infrastructure.

11. Policy must support development. A strong rural lobby is needed in Africa to affect policy. We need more activism and we need to understand and play the 'political game'. African farmers are starting to organise themselves to the level where they can influence policy and this move needs to be proactively supported.





12. From the research perspective we need to continue successful PhD research programmes (instead of stopping after a couple of years and saying: good! That was enough for a PhD student). We need to persevere in order to build on success.

13. We agree that the entire process of research (including application, knowledge transfer and service delivery processes) should not be approached from the top down, but rather from the community level.

14. We should not be concerned about the sustainability of projects, since a project is by definition something that will be concluded. The project legacy (e.g. capacity developed, take-up by farmers) is the success and sustainability of a project.

15. Research can enrich existing innovation systems. Therefore such innovation systems must be studied from the grassroots up.

16. Every country is trying to invest in capacity and skills. However, this must be linked to the real needs and desires of the community.

17. Only African people and African organisations can develop Africa.

There exists an overriding need to understand the biophysical environment. We must understand what needs to be done within individual contexts. Methodologies are required to achieve this – to understand real needs and to develop strategies based thereon. Empowerment may be achieved through the development of community organisations (e.g. self-help groups, co-operatives, training opportunities).

Finally, we must be more vigilant about technology transfer. We must disseminate appropriate information through appropriate delivery vehicles.

Appendix 1:

Authors, rapporteurs and facilitators contact list

Surname	Initials	Postal address	Email address
Ayantunde	A	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	a.ayantunde@cgiar.org
Burrow	HM	CRC for Beef Genetic Technologies, UNE, Armidale 2351, Australia	Heather.Burrow@une.edu.au
Devendra	C	Devendra Consulting, 130A Jalan Awan Jawa 52000 Kuala Lumpur, Malaysia	cdev@pc.jaring.my
D'Haese	L	Ghent University, Coupure Links 653, 9000 Gent, Belgium	Luc.DHaese@ua.ac.be
D'Haese	M	Ghent University, Coupure Links 653, 9000 Gent, Belgium	Marijke.DHaese@UGent.be
Freeman	A	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	a.freeman@cgiar.org
Gerber	P	United Nations Food and Agriculture Organization (FAO), Viale delle Terme di Caracalla, 00153 Rome, Italy	pierre.gerber@fao.org
Gericke	G	University of Pretoria Department of Human Nutrition, Pretoria 0002, South Africa	gerda.gericke@up.ac.za
Herrero	M	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	m.herrero@cgiar.org
Kristjanson	P	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	P.Kristjanson@cgiar.org
Kruger	B	National Department of Agriculture, Private Bag 13184, Windhoek, Namibia	bertus@agrinamibia.com.na
Lecomte	P	CIRAD, Avenue Agropolis, 34398 Montpellier Cedex 5, France	phillippe.lecomte@cirad.fr
Letty	B	Institute of Natural Resources, PO Box 100396, Scottsville 3209, South Africa	lettyb@ukzn.ac.za
McDermott	J	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	j.mcdermott@cgiar.org
Minnaar	A	University of Pretoria Department of Food Science, Pretoria 0002, South Africa	amanda.minnaar@up.ac.za

Surname	Initials	Postal address	Email address
Nesamvuni	E	Limpopo Department of Agriculture, Private Bag X9487, Polokwane 0700, South Africa	nesamvunie@gmail.com
Notenbaert	A	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	a.notenbaert@cgiar.org
Oelofse	A	University of Pretoria Centre for Nutrition, Pretoria 0002, South Africa	andre.oelofse@up.ac.za
Pell	AN	Cornell University, CIIFAD, 16 Warren Hall, Ithaca, NY 14853-3901, USA	ap19@cornell.edu
Speelman	S	Ghent University, Coupure Links 653, 9000 Gent, Belgium	Stijn.speelman@ugent.be
Stroebel	A	University of the Free State Centre for Sustainable Agriculture, PO Box 339, Bloemfontein 9300, South Africa	stroebea.rd@ufs.ac.za
Swanepoel	FJC	University of the Free State Centre for Sustainable Agriculture, PO Box 339, Bloemfontein 9300, South Africa	swanepf.rd@ufs.ac.za
Thornton	PK	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	p.thornton@cgiar.org
Udo	HMJ	Wageningen University, Animal Production Systems group, PO Box 338, 6700 AH Wageningen, Netherlands	Henk.Udo@wur.nl
van de Steeg	J	ILRI-Kenya, PO Box 30709 Nairobi, Kenya	j.vandesteeg@cgiar.org
van der Zijpp	AJ	Wageningen University, PO Box 9101, 6700 HB Wageningen, The Netherlands	akke.vanderzijpp@wur.nl
van Rooyen	J	University of Pretoria ABSA Chair in AgriBusiness Management, Pretoria 0002, South Africa	cjvr@sun.ac.za
Waters-Bayer	A	Rohnsweg 56, 37085 Goettingen, Germany	waters-bayer@web.de
Wilke	P	University of the Free State Centre for Sustainable Agriculture, PO Box 339, Bloemfontein 9300, South Africa	piwilke@gmail.com

Contact Information

Centre for Sustainable Agriculture and Rural Development
University of the Free State
Bloemfontein, 9300, South Africa
Tel: +27 51 401 3047
Email: stroebea.rd@ufs.ac.za

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