

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH
TECHNICAL ADVISORY COMMITTEE

**ILRI Centre -Commissioned External Review
of the Systemwide Livestock Programme**

TAC SECRETARIAT
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
October 2001

Consultative Group on International Agricultural Research (CGIAR)

TECHNICAL ADVISORY COMMITTEE

Emil Q. Javier, Chairman

11 October 2001

Dear Ian,

It is my pleasure to transmit to you the report of the First Review of the Systemwide Livestock Programme (SLP). ILRI is the convening centre for this systemwide programme. A Panel chaired by Mr. Jock Anderson (Australia) conducted the Review during March-May 2001. The Report was considered by TAC at its 81st Meeting held at CIFOR, Bogor, Indonesia in September 2001, in the presence of the Panel Chair through a video conference.

This is a unique review because, while the Review was commissioned and managed by the Board of ILRI, TAC collaborated closely with ILRI in developing the terms of reference and in the selection of the Panel Chair and Members. This was possible because of TAC's own plan to undertake an external review of this Systemwide Programme. The review report was presented to the Board and Management of ILRI who, in association with other participating centres, prepared a written response.

The Report of the Panel is accompanied by two attachments. The first contains the TAC commentary, which summarizes TAC's views on the Panel Report and on the Response of ILRI and the SLP participating centres. The second attachment is the Response of ILRI and the SLP participating centres to the Panel Report.

The Committee believes that this Review model offers a promising alternative for more efficiently managing and effectively evaluating systemwide programmes and perhaps even other cross-centre activities.

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As this is the third systemwide programme reviewed by TAC (SGRP and Ecoregional Approach were previous ones), we are now beginning to identify important lessons and some of the critical aspects for ensuring success of these programmes. We believe that these lessons have relevance for the design and launching of Challenge Programmes.

Yours sincerely,

Emil Q. Javier

cc: Francisco J.B. Reifschneider, CGIAR Director

TAC Commentary on the ILRI Centre-Commissioned External Review of the Systemwide Livestock Programme

The report of the first Review of Systemwide Livestock Programme (SLP) was discussed at TAC 81 in the virtual presence of the Panel Chair, Jock Anderson, who participated through a videoconference. The Director General of ILRI, Hank Fitzhugh, was unable to attend the meeting but sent a powerpoint presentation through the Panel Chair. TAC thanks ILRI and the Panel for undertaking this review.

The Review Process

TAC worked closely with ILRI in developing the terms of reference, the Panel profile, identification of a potential Panel Chair and Panel Members, and approved the same with consent from the Centre. The single, three-week phase of the review was managed by ILRI. The Centre Board and management received the review report and prepared a response, which TAC discussed in conjunction with the report. This review model is a first of its kind in the CGIAR and was used for the purpose of providing lessons on alternative mechanisms for quality assurance. The Committee acknowledges the cooperation of ILRI's Board and Management, as well as the collaborating institutions, in sharing the report and the process with the Committee. TAC believes that the review constitutes an independent evaluation of the programme, offers the following commentary and proposes that the report be discussed during the Annual General Meeting 2001 of the CGIAR.

Comments

The Committee found the report to be adequate in as far as it addressed the terms of reference in an analytical and constructive way. The report is lucid and highlights the key milestones since the programme became operational in 1997. TAC sees the review of this programme as contributing valuable lessons alongside the other Systemwide programmes already evaluated.

TAC commends the panel for systematically covering the terms of reference. However, there were two aspects which the Committee felt the Panel could have treated in more depth:

- i. The achievement of coherence in all areas of livestock research was one of the original objectives of the programme. TAC would have liked to know the Panel's views on the coherence of livestock-related research across the System in those activities of common interest to a number of participating institutions, partners, other stakeholders and actors in the global research and policy arena and thereby increasing the potential for impact of the CGIAR.
- ii. Appropriate balance among regions was not comprehensively covered. This would have been especially useful as the System increasingly takes a regional approach to priority setting.

The Panel highlights the need for strong leadership of SLP by ILRI as well as having the Livestock Programme Group (LPG) empowered to make decisions for quick feedback and scientific backstopping. TAC supports this observation and further notes that SLP should be pro-active in seeking new partnerships beyond the CGIAR Centres in order to harness the science it needs from Advanced Research Institutes globally. Such collaboration can stimulate the exchange of knowledge of livestock feed-related research in the private sector and of natural resources management research, both of which abound in developed countries.

The review emphasised the need for peer review starting from identification of projects to the outputs of the projects. TAC strongly supports this recommendation, as review processes are critical for ensuring high quality of research. A strong review system can correct inappropriate overlaps between Centre core programmes and the SLP; provide a systematic evaluation of proposals, and ensure the requisite balance between strategic and applied programmes.

It is commendable that the establishment of SLP has created an enabling environment for crop and livestock Centres to work together. Since one of the goals of the programme was to broaden the base of institutional participation with NARS and other research and development actors more effectively to achieve common objectives, TAC urges SLP to continue reassessing its research agenda to include topics which can reach beyond the Centres, driven by opportunities to add value.

When the SLP began, a competitive grant programme was instituted which was well received by the Centres. Unfortunately, due to the lack of designated funds for the programme, the competitive grant aspect had to be abandoned. TAC should review this and use it as a learning opportunity when the future Science Council looks at competitive grants in the context of Challenge Programmes.

The Panel made a strong recommendation for continuation of the Systemwide programme. TAC also supports this view because two-thirds of the world's rural poor keep livestock, and rely mainly on mixed crop–livestock production systems.

The small non-ruminants have not been discussed in the review report and (beyond one aspect of an IFPRI-managed project) are not yet covered by the SLP. TAC encourages SLP to identify research opportunities for this category of livestock within the context of CGIAR goals, since the majority of the poor people, particularly in Asia, keep small non-ruminants as an important component of their livelihood strategies.

It would have been helpful to TAC if the Panel had commented on how the Systemwide livestock research agenda is placed in relation to the new Vision and Strategy approved by the System with primary focus on poverty reduction.

Future of SLP

The SLP was conceived before ILCA and ILRAD merged to form ILRI. The objectives of the SLP were to integrate livestock related activities across the System in the areas of feed, livestock policy and NRM. While fully supporting the need for a Systemwide programme, also

taking into consideration the financial support of the programme since its inception and possibilities in the future, TAC proposes to take a further look at the Systemwide programme so that it revolves around a poverty focus and be people-centred, as envisaged by the Vision and Strategy endorsed by the Group.

TAC endorses the Panel recommendation of the future need for a Systemwide programme. However, TAC also believes that the current designation as “Systemwide Livestock Programme” is too broad and leads to some confusion amongst the donors over ILRI’s role as the global livestock Centre and its role as the Convening Centre for the Systemwide Programme on Livestock. The latter bridges the gap between the CGIAR Centres, non-CGIAR institutions in the South and North and brings complementarity on mutually defined objectives.

The review recommends an optimal funding base in the order of magnitude of US\$4-5 million per year catering for built-in management structures and an enhanced strategic research programme. TAC concurs with this proposal to not only strengthen the existing project portfolio but also enhance the same in relation to the new Poverty Focused Vision and Strategy of the CGIAR. In the event such funds are not forthcoming, TAC would then endorse the alternative scenario proposed by the Panel which entails a minimum of US\$2.0 million annual contribution as a low cost solution to continue with the current programme.

ILRI and Partners' Response
First Centre and TAC Commissioned
External Review of the Systemwide Livestock Programme

ILRI and Partner Centres wish to express much appreciation to the Review Panel for their constructive analysis and positive report on the Systemwide Livestock Programme (SLP). We find the recommendations most helpful and offer only few comments:

Panel's recommendation

- *ILRI needs to continue to exert its role as strong convener of the SLP, by providing scientific leadership and overall coordination, carefully balanced with ample consultation with the other Centers. Scientific leadership is particularly important to strengthen and maintain the credibility of the Program and to assure quality outputs;*

Management's response

Agreed:

ILRI plans to continue playing the role of the strong convener which was ascribed in its first strategic plan. As one objective of the SLP is to build synergies and lever resources for livestock related research among the Plant oriented centers (and their partners) who did not ordinarily undertake such research, the strong convener role seems appropriate. However, continuing efforts will be made to manage the SLP processes and activities in such a manner as to promote even stronger ownership of the programme by all partners.

Panel's recommendation

- *The Board of Trustees of ILRI and its Program Committee need to provide active oversight of the SLP, and make sure that the somewhat subjective line that separates ILRI's own global agenda and that of the SLP remains distinctive.*

Management's response

Agreed:

While providing oversight to the SLP, ILRI's Board sought to empower the LPG as an important mechanism for promoting Programme coherence, cohesion and transparency. The Panels recommendations concerning strengthening the LPG, particularly its composition and its processes, are welcomed.

Panel's recommendation

- *The governance mechanism should be strengthened and consolidated, via strengthening the LPG and its processes, with better continuity in membership and expanded review mechanisms.*
- *Continuity in membership is essential to further reduce the currently acceptable transaction costs, and to allow for more frequent and expedient electronic communication. Similarly, members of the LPG should be adequately empowered to assure rapid implementation of the Group's decisions and effective monitoring.*

Management's response

Agreed:

The LPG plays pivotal roles of providing Programme coherence, cohesion and transparency, as well as developing effective and efficient operating processes. The Panel's analysis concerning conditions for effective membership provide good guidance and will be pursued. Partners will seek to respond to these recommendations concerning the LPG and will seek to appoint members at the highest organization level that the SLP Programme portfolio can justify.

Panel's recommendation

- *Project assessment should be subjected to independent peer review.*
- *Projects selected for funding will not only have to be approved on the basis of scientific excellence, but also need to provide the "added value" expected from a Systemwide program while excluding those that clearly belong within the mandate of individual Centers. In this respect, it is expected that the members of the LPG will consult with their respective Directors of Research to assure that the proper sorting of projects is made. This is particularly important in the case of the ILRI's representative, who has to ensure in consultation with the ILRI DDG-P that the SLP projects do not substitute (or even appear to substitute) for ILRI's core program.*
- *Value added by SLP-sponsored projects should be explicitly documented in the project publications and in SLP reports.*

Management's response

Agreed:

The Panel comments on the inadequacy of the current system for reviewing projects for SLP support, a matter which the LPG has discussed on several occasions, including at its most recent meeting (January 2001). The current system evolved as

one which attempted to balance the need for external scientific project review with the cost (financial, response time etc.) of doing so. The LPG has attempted over time to pay particular attention to minimizing over all transaction costs of the SLP. However, we agree with the Panel's recommendations concerning building additional rigour into the project review process through obtaining external inputs. The mechanisms recommended by the Panel will be pursued. Efforts will also be made to strengthen efforts to document the value added by each SLP activity/project at design, evaluation and publication phases.

Panel's recommendation

- *The lead Center, as well as the other Centers, need to provide timely scientific backstopping to activities carried out by the respective consortia and assortment of national institutions. It is therefore important for members of the LPG to interact with their respective Directors of Research, and that the SLP Coordinator succinctly inform Centers' Directors of Research of issues pertaining to strategic research that need their attention.*
- *Participating IARCs have to ensure that feedback from field and on-farm experimentation is rapidly internalized and that it generates the required follow-up in terms of strategic research carried out by themselves and by NARIs. The mechanism suggested (above) should satisfy this requirement.*

Management's response

Agreed:

We agree that SLP supported activities/projects are implemented with inherent requirements for scientific backstopping from Lead Centres. In order to strengthen this aspect of project implementation, both the LPG and the Coordinating Unit of the SLP will institute formal mechanism to ensure requisite backstopping. These organs of the SLP will also seek to promote rapid feedback and internalization of research results.

Panel's recommendation

- *As further progress is made in developing the portfolio of research projects, the LPG, in consultation with the relevant Directors of Research, will have to make sure that an appropriate dialogue amongst SLP projects, and between SLP projects and Ecoregional Programs takes place to maximize the effectiveness of the resources allocated to these activities.*

Management's response

Agreed:

We believe that the operationalization of the SLP as a Virtual Network (vNetwork) will greatly aid the process of building synergies among partners and promoting horizontal transfer, and cross fertilization.

Panel's recommendation

- *In order to avoid a loss of the investments made to date, and to meet the expectations created by the development of a rich and promising portfolio of projects, as well as the development of exciting new ones, adequate funds (which the Panel feels could usefully be at \$3-4 million a year) should be provided to the SLP.*

Management's response

Agreed:

We appreciate the Panel's endorsement of the SLP and strong recommendation for continuing substantial funding in future. We believe that there have been significant returns to previous investments; however, we concur that full values will not be achieved from these investments unless the supported research continues.

SRD/TAC:IAR/01/31

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH
TECHNICAL ADVISORY COMMITTEE

Reviews of Centre and Systemwide Programmes

**ILRI Centre -Commissioned External Review
of the Systemwide Livestock Programme**

**Panel: Jock R. Anderson (Chair)
Olanrewaju B. Smith
Raúl R. Vera**

June 2001

**THE SYSTEMWIDE LIVESTOCK PROGRAMME
CENTER- and TAC-COMMISSIONED EXTERNAL REVIEW
(a first CATCER)**

[19 June 2001]

Outline

The Terms of Reference given to the Panel concerned issues relating to Programme Objectives, Programme Performance, and Programme Activities constituting Tiers 1, 2 and 3, respectively. The Panel's Report is similarly organized as follows:

SLP Program Objectives (Tier 1)

1. The original concept and relevance of SLP's objectives, priorities and strategies to the goals of the evolving CGIAR

SLP Program Performance (Tier 2)

2. The effectiveness of ILRI's convening role
3. The effectiveness and efficiency of the SLP with respect to the original objectives
4. The effectiveness and efficiency of the SLP with respect to implementation
 - 4.1 Achieving coherence in livestock-related research across the CGIAR System and other stakeholders including NARSs
 - 4.2 Adding value to the System's on-going research, to the benefit of knowledge relevant to the livestock sector
5. The effectiveness of SLP's governance, decision-making, organization, accountability, resource mobilization and allocation, and mode of operation.
 - 5.1 Governance
 - 5.2 Decision making and organization
 - 5.3 Resource mobilization

6. SLP Program Activities (Tier 3)

- 6.1 The portfolio and its performance
- 6.2 Program activities

7. The SLP in the Future (Tier 1 revisited)

- 7.1 The need for and continuing relevance of the SLP
- 7.2 On balance among regions
- 7.3 On core versus SLP balance
- 7.4 On organization of SLP
- 7.5 Recommendations on future objectives

8. Summary of Recommendations and Overview

Appendices

1. The Terms of Reference
2. The Review Panel
3. The Review Program

4. Historical Perspectives on ILRI and SLP: A Note from the ILRI DG
5. Summary of a Survey of SLP Stakeholders
6. Commentaries on Specific SLP Projects
 - 6.1 Improving crop-livestock systems in the dry savannas of West Africa
 - 6.2 SLP projects in LAC, with particular emphasis on Central America
 - 6.3 Utilization of forage legume diversity for dairy production and natural resource management in East and Central African highlands
 - 6.4 South and West Asia and North Africa
7. SLP Procedures
8. SLP Publications

Summary

The Systemwide Livestock Programme (SLP) was conceived at a time of change and crisis in the CGIAR. Perhaps similar times are ahead? Nevertheless, it seems a good time to review this important Systemwide Program (SP). This Panel is delighted to have had the opportunity to do so, and is highly appreciative of the many scientists and managers who gave their time so generously to assist the Panel in its efforts to distil useful lessons from the experience.

Perhaps the most critical question posed to the Review is about the “SLP process”, rather than specifically about the research itself. Are the processes and their transaction costs producing results that would not be realized as well as if the SLP did not exist? Surely a difficult counterfactual question but one in which the donor community should be interested in as it approaches a new era of Challenge Programs (CPs). The answer in the case of the SLP is necessarily highly judgmental as the full costs are tricky to measure, and the benefits impossible to assess well at this still early juncture. The Panel feels, however, that, overall, the benefits will be commensurate with, and will probably well exceed the costs. The situation varies greatly by project supported. Some are excellent examples of the inter-center collaboration envisaged at the outset. A few could be handled as efficiently within a Center's own portfolio of research.

ILRI itself also believes the SLP has promoted more effective collaboration among ILRI and the plant Centers and IFPRI, because other Centers mostly had not previously given sufficient attention to livestock in their research agenda. In this sense, the SLP has been effective in starting to deliver on TAC's original recommendation. However, recognizing the shift from unrestricted to project-restricted funding, an issue ILRI (and others) must confront is whether the SLP remains the most effective means for promoting important feeds and livestock-related NRM and policy research in the future. Given the dynamics of System change presently under way, it is difficult to predict which directions investing stakeholders will be inclined to take. The Panel hopes that efficient and effective SPs will continue to receive strong support but there is the risk that new CPs may squeeze them further.

Have SLP grants had a positive impact on catalyzing productive research on feeds and NRM and relevant policy work? The Panel believes so and, although not easy to assess, probably of the order of a doubling of resources has been leveraged. The most measurable results from the catalytic grants provided by SLP are the widespread trials and related farmer uptake of better performing fodder species not hitherto widely used by many farmers. But these are yet early days for research and development activities supported only in recent years.

Improved attention of plant Centers and national partners to livestock in agricultural research is surely a reality, although not all this can be directly attributed to SLP per se, given the pre-SLP collaboration between ILRI and other Centres, especially IITA. Moreover, partly through the work of ILRI and other CGIAR Centers, there is a growing realization of the increasing importance of livestock in both earnings of the poor, and in the diets of all, especially as incomes increase.

It is too soon to expect too many tangible products, but surprisingly rapid progress has been made in the joint work with CIAT, ICRISAT, ICARDA, IITA and ICRAF. In only two cases (IITA and ICRISAT) was there strong prior linkage upon which to build, but the new work supported by SLP has surely boosted progress. Were SLP not to continue, doubtless some of this progress would continue, as the results have been so encouraging to all concerned, especially among the diverse national research and development workers involved in the projects. Individual Centers would thus wish to continue to address livestock feed and livestock-NRM-related work for the worthy intrinsic importance, but all say they will be greatly helped to do so under an arrangement such as a refurbished and well resourced SLP.

The strictures of past SLP funding have demonstrated that modestly sized grants can be remarkably effective, if strongly supported by other resources. This is especially the case for cash-strapped cooperating NARSs, which usually have reasonable human resources to contribute to collaborative efforts but rely almost totally on external project resources to achieve significant field and farm-based work programs. For the future, what is the minimum effective amount of SLP grants to ensure productive collaboration? ILRI and others are proposing some \$2 to 4m a year for a future SLP effort, and this seems to be of a realistic size to justify the facilitating overheads and yet to make a real difference in programmatic achievement. If the approximate double leveraging is sustained, this would correspond to an increase over the originally conceived \$4m imagined for the initial program.

Do the transaction costs of the SLP bring additional benefits or should each individual project involving ILRI, other Centers and partners seek individual funding without the overheads of the SLP (Coordinator, LPG meetings etc.)? The LPG is the steering body of the SLP and is constituted by a representative of each of the 10 collaborating Centers. Transaction costs of any activity become an issue when the benefits are not commensurate with the costs. The benefit of an SLP-guided inter-center collaborative effort is that it brings together a critical mass of expertise required to address the complex issues surrounding feed and crop-livestock-related NRM. Under the SLP umbrella, trans-disciplinary teams are put together to work on well circumscribed problems using mutually agreed-upon approaches or developing essential new tools and methods. The perception that this is not a one-Center (ILRI) driven and dominated agenda is extremely important for group coherence, performance and commitment. The alternative of ad-hoc bilateral arrangements between ILRI and one Center or the other would be less efficient, and the transaction cost of seeking special funding as well as of dealing effectively with coordination would likely then become an even bigger issue in such circumstances.

A summary of the Recommendations of this Panel, which include the desirability of having an exit strategy, is set out in bullet form in section 8 of this Report, and so for brevity is not repeated here. ILRI as the convening Center put much effort into operationalizing the SLP and has learned a lot about how to make such SPs work. In essence, the SLP has resulted in much expanded inter-center cooperation, it has the potential to multiply several fold the likelihood of impact on smallholder crop-livestock systems, with its attendant impact on poverty and human wellbeing, and has provided important feedback to Centers on the multidimensional nature of many of their products and outputs. Building on these lessons, the Panel is convinced that SLP is indeed worth the effort of all involved, and that an even better job can be done in the

future, providing, of course, that investors really get behind the worthy thrust that it represents and support a program of sufficient size and substance to justify the coordination costs.

1. SLP Program Objectives (Tier 1)

The original concept and relevance of SLP's objectives, priorities and strategies to the goals of the evolving CGIAR.

The Concept: In 1994 TAC recommended that a number of CGIAR Centers convene Ecoregional programs to focus principally on natural resource management research. Eight Ecoregional Programs (EPs)/Initiatives were undertaken. TAC also recommended that a number of Centers convene Systemwide programs to focus on specific commodities and/or subject matter areas. TAC recommended that Ecoregional and Systemwide programs be strongly interactive. TAC's recommendations concerning objectives and funding of the **Systemwide Livestock Programme (SLP)** were as follows, and built on earlier analysis of a Working Group on Livestock research and the many considerations involved in the creation of the new entity ILRI.¹

Objectives: "Build and strengthen linkages with plant-oriented centers so as to develop integrated and coherent strategic and applied research, and research-related programs on feed development, Natural Resource Management (NRM) and associated policies."

"Lever CGIAR resources invested in center programmes, Ecoregional Initiatives and other Systemwide Programmes in order to most effectively address development-oriented livestock research."

Funding: "TAC reaffirms that in due course and starting in 1996 up to US\$4 million can be assigned to the Systemwide initiative on livestock."

Six Systemwide programs (SPs) were undertaken. The SLP was potentially the largest of these and differed from the others in some essential aspects. The most important was, whereas the other SPs were intended to link and strengthen existing Center programs, livestock research was not part of the research agenda of most of the Centers expected to participate in the SLP.

The SLP, and indeed all the SPs and EPs were launched at a time which coincided with a period of enormous funding shocks and considerable changes in the internal and external environments in which Centers operated. Notwithstanding these shocks and changes, ILRI, the convenor, and its partners persevered with the development of the SLP.

Panel Comment: The relevance and performance of EPs are the subject of a separate TAC review,² and this review is focused on just one SP. The Panel is strongly of the view that SPs

¹ For a fuller account of the history, see the SLP document "Chronology of Its Development" and Appendix 4 of this report. A useful discussion that places SLP into the recent CGIAR-wider context is to be found in *Priorities and Strategies for Resource Allocation during 1998-2000*, TAC Secretariat, Rome, June 2000, Chapter 7.

² *Review of Systemwide Programs with an Ecoregional Approach*, TAC Secretariat, Rome, June, 2000.

constituted an excellent initiative for the CGIAR System, especially if it was indeed to be a functioning *research system* rather than a set of highly independent agricultural research centers. Given the prior relative inattention to livestock issues by those Centers focused on crop improvement, the concept of SLP was particularly relevant. The first objective is also judged to be highly relevant to implementing such System research on livestock issues. The second objective is probably just as relevant, although it does have the somewhat vague concept of “leverage” as a central element, taken up below.

The Panel returns to these issues as they pertain to future SLP program objectives in section 7 of this report.

SLP Program Performance (Tier 2)

2. The Effectiveness of ILRI's Convening Role

The initial implementation of the SLP was marred by unfulfilled expectations of adequate funding, which reflected negatively on the SLP itself and on the role of ILRI as the convening Center. These constraints were further compounded by having initially followed a competitive grants approach that implied considerable costs in external peer reviews of the portfolio of projects, and competition between Centers. Eventually these difficulties were overcome, but left behind a costly legacy in misunderstandings and the transaction costs incurred.

The appointment of a full-time SLP Coordinator coincided with the streamlining of the SLP objectives and, with the new funding that at last became available, the program was effectively launched with the first set of projects in 1998. At that stage, and subsequently, projects were not subjected to independent external review, but were circulated among participants in the Livestock Program Group (LPG) to assess relevance in terms of objectives and adequacy in methodology. (Appendix 7 contains materials recently used in project scrutiny.) The effectiveness of this review process has been variable, with some of the approved projects satisfying the required standards of scientific integrity, whereas others would have benefited from a more in-depth analysis. This may well reflect the composition and expertise of the LPG.

For the above reasons, it is recommended that a more exhaustive review of submissions be made in the future. To avoid unnecessarily high costs, the following alternative is suggested:

Proposals should be circulated to the DDG for Research (or equivalent, such as the Director of Research) of two of those participating Centers not involved in the particular project under consideration, selected on the basis of the subject matter, who would then request the opinion of at least one relevant scientist in the respective Centers. The process would be complemented by an external reviewer, nominated by the LPG.

This would cut the transaction costs and would bring in the desired external input for helping to assure science quality. In revisiting its arrangements, the SLP may wish to consider other variants of this approach to quality assurance.

Despite the limitations referred to above, the first three years of SLP have been effective in accomplishing the objective of inter-center cooperation with respect to feed and fodder evaluation and the role of ruminant livestock in crop-livestock systems, and have identified also the need and opportunity for closer cooperation with other systemwide programs created in the interregnum, such as the Nutrient and Water Management Program and the Global Mountain Program. Although there is evidence of increasing involvement of various Centers, as well as increasing commitment by them to inter-center cooperation, the leadership of the SLP needs to continue making a significant effort in building bridges and involving Centers to the extent that funding permits. Documentation of the value added by SLP to existing, individual Center-led activities should facilitate further progress along this line.

The management structure of SLP implemented since 1998 has incurred modest and acceptable transaction costs, which would be further reduced if Centers provide the required continuity in LPG membership as suggested below, and if the virtual network under development in the respective SLP project is effectively utilized by partners in the SLP. This should lead to a containment of the number of LPG meetings to no more than one per year, and perhaps fewer. Communications among members of the LPG at other times would be by electronic means, including teleconferencing if resources permit, and taking advantage of the vNetwork, once it is operational. Resources thus released could be used to implement and finance project reviews as suggested above.

Two other factors on the benefit side place the issue of transaction costs in a proper perspective. First, although somewhat difficult to quantify, the SLP did “lever” some financial resources, as discussed in section 3.2. Second, it is difficult to put a value on the benefits of the strong linkages created and strengthened by the SLP amongst IARCs and between IARCs and NARIs. It is precisely some of the latter national institutes, which have benefited considerably from the associations, that constitute the strongest advocates of the program.

Last but certainly not least, the Panel wishes to comment on the current Coordinator’s role and performance. He has done a remarkable job in energizing the SLP. His considerable networking skills have served the SLP well indeed. The Panel’s recommendations for governance changes in no way reflect on his performance. Indeed, a future SLP and LPG will need to be serviced by a Coordinator with similar skills and experience as those applied in the recent years of operation.

3. The Effectiveness and Efficiency of the SLP with Respect to the Original Objectives

3.1 The Effectiveness and Efficiency of the SLP with Respect to the Original Objective of “Build and strengthen linkages with plant-oriented centers so as to develop integrated and coherent strategic and applied research, and research-related programmes”

Assessment criteria. The following three criteria were used to evaluate effectiveness. Efficiency is here taken to relate more to quality or how well the job was done, and accordingly is treated under program activities (Tier 3) with regards to the quality of projects and related activities.

(i) **Number of collaborative projects to date.** According to the SLP biennial reports, the program has supported, since 1997 when the first three research grants were awarded, a total of 18 projects that involved 8 plant-oriented CGIAR Centers, as well as a diverse set of other partners including Ecoregional initiatives, other systemwide programs, advanced research institutions and national research systems in SSA, SEA, SA, CAS-WANA and LAC. Each of the CGIAR Centers involved served as the lead institution for at least one project activity. Such a large number of projects, forged with limited funding and within a short period and that brought together 10 of the CGIAR Centers as well as several non-CGIAR centers to collaborate with ILRI in different consortia on common problems, indicates significant evolution of productive linkages within the CGIAR System.

(ii) **Evidence of increased awareness and commitment to tackling livestock feed, NRM- and policy-related issues in other Centers.** A mere listing of inter-center collaborative projects while indicative, could not, however, serve as the sole indicator of effective inter-center linkages. Creating and/or raising awareness of livestock feed- NRM- and policy-related issues within participating partner Centers would serve admirably as a second-level indicator of effective and strong linkages with plant-oriented Centers. Inter-center linkages and collaboration predate the SLP of course, particularly among plant-oriented Centers, which share common goals and use similar approaches to tackle comparable issues, even though applied to different commodities. The task of the SLP which was to create and enhance an awareness of topical and urgent livestock-related issues within Centers ordinarily more concerned with improving cropping systems, was certainly a difficult one. The Panel concludes that the SLP has succeeded in raising and strengthening awareness within partner Centers, and thus increasing their commitment to address livestock feed quantity and quality issues, and the related NRM and policy issues in the various agro-ecosystems within their mandate regions. This is illustrated here by three examples.

IFPRI as the lead institution and in collaboration with ILRI and national institutions in Bangladesh, Kenya and the Philippines is currently carrying out an SLP-funded project on “Interaction of policy and scale factors affecting smallholder livestock production in developing countries”. This project is building on the path-breaking work jointly produced by IFPRI, FAO and ILRI, and published by IFPRI in 1999 under the title *Livestock to 2020: The Next Food Revolution*. The project highlights the need to address a number of policy-related issues surrounding livestock feed, and is apparently contributing to efforts to bring livestock policy research more clearly into view at IFPRI.

Another SLP-funded project on the improvement of crop-livestock systems in the dry savanna of West Africa, is contributing towards efforts to build on the long-term research activities carried out at IITA and ICRISAT, and which have resulted in the production of improved grain and dual purpose varieties of cowpea and sorghum, respectively. Under the

leadership of IITA, and with part of the funds from SLP, a consortium of international centers (ICRISAT, ILRI and IFDC), national research systems from Nigeria, Niger and Mali, and an advanced research institution (CORD), is evaluating crop-livestock production systems based on improved sorghum, improved dual-purpose cowpea and an innovative cropping geometry designed to produce sufficient grains for human consumption as well as fodder for livestock feeding. Nutrient flows along the soil-crop-livestock continuum are monitored in order to evaluate system sustainability from a soil-productivity perspective. This research and production strategy, which highlights the role of livestock in a crop-livestock system, has been included in the current IITA Medium Term Plan (MTP) and, of course, that of ILRI.

A final pertinent example of how SLP activities have raised the profile of livestock feed-related issues within a plant-based Center is well illustrated by the on-going SLP funded project on the utilization of forage legume diversity for dairy production and natural resource management in East and Central African Highlands. This ICRAF-led project with strong participation from ILRI and the Kenya Agricultural Research Institute (KARI), capitalizes on the excellent work done by ICRAF on browse, although with a strong agroforestry slant. The project has injected a strong livestock feeding component into this work, and the encouraging results obtained to date in terms of adoption and utilization of *Calliandra* as livestock (dairy goats and cattle) feed have led to the development by the ICRAF-led group of a second-phase proposal with strong livestock components.

(iii) ***Evidence of a promotion of strong inter-personal relationship among participating scientists.*** SLP has strengthened inter-center collaboration and interaction where it counts most—at the personal level among participating scientists—by paying sufficient attention to group meetings where appropriate methods are worked out. Such interactions allow trans-disciplinary teams to work together comfortably, and thereby strengthen interpersonal relationship, an essential ingredient for collaborative efforts. Some of the researchers the Panel interacted with, found this approach most beneficial, and noted that it prepared them for the difficult task of working harmoniously within a large inter-disciplinary group.

In other words, the value added of SLP is that it sharpened and focused new and existing inter-center collaboration around livestock feed-related and NRM issues that fit within the existing farming systems in specific target areas. It is safe to conclude that, without this SLP-supported input, some inter-center collaboration would still take place, but perhaps at a slower pace, and in a less focused fashion on related livestock feed and NRM issues, and thus, with the much-sought-for impact so much farther away.

3.2 “Lever CGIAR resources invested in Center programmes, Ecoregional initiatives and other Systemwide programmes in order to most effectively address development-oriented livestock research.”

An attempt has been made to estimate the “leveraging” effect by asking each project leader to estimate the expenditures by other IARCs and other partners on each of the SLP projects. The “Other to SLP resource ratio” varies considerably across those eight projects for which this could be done, from 0.7 to 3.4, and averages about 1.8, so say 2, to avoid pretentious

precision. In short, an approximate doubling of research resources committed to livestock-related work has been achieved through the SLP.

The leveraging idea, however, is not a very clear one, as there may be a “robbing Peter to pay Paul” element at work, an aspect even more difficult to attempt to quantify. Accordingly, these data must be taken with a large grain of salt. The Panel is not too impressed with the idea of SLP leveraging ILRI core resources (see the final paragraph of Appendix 4), and notes that this comes with the additional “cost” of some other Centers complaining that ILRI should not be seen to be using SLP resources to fund what is perceived to be its own core program.

Notwithstanding the above, the initial endowment of two million dollars to the SLP had a large and multiplicative effect in terms of creating a number of inter-center projects and developing effective synergies, as can be inferred from the current portfolio of projects and the assessments of a sample of them included herein and in Appendix 6. Furthermore, it is posited that the intangible benefits, in terms of increasing cooperation and communication among Centers, and between Centers and NARIs have been as large, if not larger than the above effects.

4. The Effectiveness and Efficiency of the SLP with Respect to Implementation

4.1. Achieving coherence in livestock-related research across the CGIAR System and other stakeholders, including NARs

Coherence is in the eye of the beholder, and some of those participants and observers consulted by the Panel were rather critical of this aspect of the program to date. This theme is taken up in section 6.1 in the context of the current portfolio of projects.

4.2 Adding value to the System’s on-going research, to the benefit of knowledge relevant to the livestock sector

On-going research conducted by the SLP will likely expand the knowledge base regarding smallholder crop-livestock systems since many of the projects are involved in validating relevant technological and policy interventions. At the present stage of evolution of the SLP, a number of possible outcomes that would not have been otherwise realized are apparent.

The SLP portfolio of projects is in the process of helping to define and refine the contribution of cereal and legume grain residues, fodder trees and shrubs, and forage to farming systems in a wide range of environmental and socioeconomic conditions. In the more advanced cases, (e.g., ICRAF-, CIAT-, ICARDA- and IITA-led projects) there is incipient adoption and considerable farmer interest. In some of these cases, the on-going projects have increased farmers’ awareness of the need and possibility of expanding the range of feed components, and are generating new demands for improved and more diversified germplasm components. The Centers can thus receive significant feedback from on-farm-based SLP projects regarding the profile of some of their products and by-products, as seen by farmers interested in their use for fodder and for soil

enhancement, but this process has still to be internalized by some Centers. It is also apparent that the range of adaptation of some of these components is being better defined, particularly in terms of suitability for existing and evolving smallholder crop-livestock systems, whereas in other cases the on-going research is raising new issues that will require fine tuning by the respective Centers. Specific examples are cited in Appendix 6.

On-going bioeconomic analyses and modelling of crop-livestock systems will undoubtedly contribute to identifying new issues and suggesting new hypotheses, but it is still too early to judge the extent to which this possibility will be realized. There is also a significant, but yet to be realized, opportunity to assess livestock-fodder-environment interactions and tradeoffs. Some of the on-going work will document particular aspects (e.g., ICRAF's, CIAT's) of these environmental impacts, but a more integrated approach will be required in the future. There is, therefore, a real opportunity for the involvement of the Soil, Water and Nutrient Management Program (SWNMP) of the CGIAR, in strategic research relevant to crop-livestock systems across a variety of ecosystems and socioeconomic circumstances. Active interaction between the SLP and SWNMP has already started with a new DFID-funded project in East Africa dealing with these subjects.

SLP projects with a large component of seed-based technologies may increase linkages of the small farming sector with private industry, since there is evidence that they generate a significant informal (farmer-to-farmer) and formal (incipient seed-industry) trade of seeds. These activities may in turn have a modest multiplicative effect in terms of employment and development opportunities. There is limited and undocumented evidence that these processes are taking place in at least some of the regions (e.g., ICRAF- and CIAT-led projects). Similarly, where (cattle or goat) milk is an important output of the crop-livestock systems, small household-based enterprises may evolve to produce cheese and other value-added products (e.g., in Costa Rica).

The efforts of some of the SLP projects in the area of modelling should lead to systematizing and making widely available knowledge that would otherwise remain confined to particular sites and ecosystems. In turn, modelling can now rely on a wider database, particularly if the vNetwork and vLab projects are successfully implemented and continued. Similarly, the existence of the SLP should lead to sharing of research methods and techniques, a process that would probably occur anyway but at a slower pace.

The gradual involvement of national universities in some of the projects, as well as universities from the North and their respective interactions, should have a significant multiplicative effect over the medium term.

Last, the focus of the SLP on feed resources, some of which are relevant to several countries within an ecoregion, should lead to increased horizontal cooperation among NARIs, especially when language and cultural barriers are minimized. Examples of this situation can be found in the LAC and African projects, among others.

In summary, there is preliminary evidence that SLP projects are producing outputs that increase the knowledge base relative to smallholder crop-livestock systems, and that would

otherwise be coming at a slower rate. This includes not only knowledge relative to the niche for the different products of the plant-oriented Centers, but also their interactions with other biophysical and economic components of systems as well as some of their environmental impacts. Impacts on labor, poverty and other socioeconomic parameters still await additional documentation and analysis, but the SLP would need to continue for several more years until more definitive data on these issues can be generated.

5. The Effectiveness of SLP's Governance, Decision Making, Organization, Accountability, Resource Mobilization and Allocation, and Mode of Operation

5.1 Governance

The CGIAR System has long prided itself on the strength of its governance, particularly with each individual Board being accountable for each Center and its programs. The Boards themselves are the subject of regular review through the periodic EPMRs/ERs, and in this way there is overall accountability to the Consultative Group itself and its central instruments of control, such as TAC. The creation of SPs, with work programs extending across two or more Centers, thus posed something of a new challenge in governance, and it is fair to observe that there was not universal agreement on how the issue would be handled across the SPs.

The most recent EPMR of ILRI offered a natural opportunity to address governance issues, but it (p. 78) "was not asked to review the SLP but to comment on ILRI's involvement and functions in the program." The EPMR Panel was clearly not too happy (p. 79) with the approach taken by ILRI to its convening role, to some ILRI "core" research elements in SLP, and to reporting arrangements, although both TAC and the Center took issue with some of these views, both expressing contentment with the reporting mechanisms (e.g., p. xxiv).

In the current ILRI MTP there is fine-tuning of some of these matters. SLP is presented as ILRI Project 8, and thus implicitly as just another ILRI project. There are, of course, clear statements that SLP is primarily an inter-center collaboration program. The reporting process takes place at various levels: overall comment in the ILRI Annual Report; detailed reporting in the SLP Biennial Reports; and technical publications, informal reports and dissemination documents are produced by the respective lead Centers and national partner agencies. This Panel is content with these pragmatic reporting arrangements.

It is also content with the overall responsibility for the SLP resting with the ILRI Board, the Board of the convening Center, on behalf of the CGIAR System. The other Centers involved are also generally content with this arrangement. Part of their agreement with the scheme relates to their equal representation on the Livestock Programme Group (LPG), convened by ILRI, with representatives assigned by the respective cooperating Centers.

The Panel considered several alternative models for administration of a program such as the SLP, as indeed did the ILRI Implementing Advisory Group and the ILRI Management team and Board in the mid-1990s. The contemporary good practice used by advanced research

consortia such as NIH, for instance, is to have a Scientific Committee (of leading specialists in the subject matter) in charge of both the peer review process as well as the allocation mechanism. The members of such a committee are authorities in the respective fields of science and not usually directly connected with the management of the scientific enterprise at hand. Were SLP to be a much larger program of work, such as something more than, say, \$5m a year, such a mechanism would be the way to go. But in the present resource-constrained environment, such is simply not possible, and cannot be considered as a feasible option at this time.

A parsimonious and more suitable set of processes is suggested in section 2. The LPG plays several roles in the administration of the SLP, and it is about some of these that the Panel is less than happy. Membership of LPG has varied across Centers in terms of continuity of service, and level of seniority of Center staff, so generalization is difficult. This topic is taken up in the following sub-section.

5.2 Decision Making and Organization

Priority setting for the SLP can be considered at various levels. At the highest level, the restriction and focus of the scope of work to be supported (livestock feeding, livestock-related NRM and policy work) was set by TAC, under advice from the several committees on livestock research that had been convened in the early 1990s. Some contemporary observers see the scope as excessively restricted (especially if it is interpreted by some as ruminant feeding only), yet others see it as insufficiently focused, and would, for instance, prefer the SLP to be addressing only ruminant feeds and forages. The Panel itself is comfortable with the present scope.

The decision making procedures of SLP have varied greatly over its life. Originally, the plan was to run it as a competitive grants program (CGP), wherein Centers would make (presumably mostly joint) proposals, and these would be scrutinized, assessed, prioritized, and then selected projects funded. As is set out in Appendix 4, such a scheme had to be abandoned in the light of the insufficiency of funds to sustain such a process, and the Panel agrees that that was unavoidable. It is a pity that only partial use could subsequently be made of the peer reviewing of the early proposals undertaken in the 1995 efforts. Even more a pity that there was so much disillusionment with the SLP among early applicants because of the long-delayed operationalization after their considerable earlier efforts expended on preparing applications.

What emerged in place of the CGP, once some funding became available, was a set of pragmatic procedures that have set the present portfolio. By agreement of the LPG, Centre partners could submit project proposals at any time of the year. However, these were mostly received just before LPG meetings. Once received, the SLP Coordinator sent the respective projects for review against set criteria (Appendix 7) by LPG members. Sponsoring members were not asked to review proposals submitted by their own Centre. Reviewing LPG members could recommend: approval, revision or disapproval. Based on syntheses of responses from reviewers, the SLP Coordinator made proposals for funding at succeeding LPG meetings when decisions were taken on the basis of consensus or, as necessary, by voting. At its meeting of January 2001, the LPG agreed to refinements to the SLP concept note format (Appendix 7) and to twice-a-year (March and October) calls for proposals. Attempts have been and are made to

achieve regional balance, programmatic diversity, a mix of temporal scales of product delivery, and so on. Is this process good enough? The Panel does not think so, and has the following suggestions for strengthening it.

There is an absence now of independent peer review, which flies in the face of good contemporary practice in leading research systems around the world. The process amounts to the applicants deciding on their own ultimate allocations among the SLP program. The Panel understands that procedures are adopted to minimize the potential self-serving nature of the process, but there is no escaping that it is a flawed system of decision making.

Accordingly, the Panel **recommends** first that, if SLP is sustained, new procedures be invoked (outlined in section 2), which feature minimally the engagement of external peer reviewers, who make careful assessments, possibly in a blind process. These assessments can then be considered by the LPG, according to the stated criteria. Much if not most of this work can be done electronically.

Second, the Panel recommends that membership in the LPG should minimally satisfy four conditions:

- *continuity*: LPG members representing the participating Centers should not be rotated between meetings, to assure the required institutional memory, ability to follow up on decisions made in earlier sessions, and commitment to the program;
- *decision-making power*: members of the LPG should have a substantial and consistent degree of authority, or be empowered by their respective Centers to that effect, such that agreements reached in LPG meetings are effectively implemented by the Centers;
- *accountability*: by the same token, members of the LPG should be held accountable to the Group and to their respective Centers;
- *level of authority*: if the SLP continues into the future, it is possible that the level of funding will vary over time. Under these circumstances, membership in the LPG should be as consistent as possible with the level of funding envisaged for the Program. If funding of the SLP were to increase substantially (e.g., > \$4m), it would be highly desirable that the LPG be substituted by a Steering Committee composed of the Centers' Directors of Research. Even in the absence of substantial resources, it can be argued that if Centers seriously support systemwide programs, the active participation of Directors of Research would convincingly convey their commitment. An added, intangible, advantage would be derived from bringing together senior management to discuss highly focused systemwide research issues. The Panel in taking the position it has is, needless to say, highly conscious of the need to avoid excessive over-loading of the Directors of Research with new responsibilities for modest resource bundles, especially at a time when they are facing further over-work in coming to grips with CPs and the like.

Third, the Panel recommends that the LPG uses the results of the peer-reviewed assessments, conducted along such lines as indicated above, as one of the criteria in allocating

funding to new projects. The other criteria for allocation should be based on the extent to which new projects satisfy the stated objectives of the SLP, are congruent with the rest of the SLP research portfolio, and add value to inter-center research and cooperation.

5.3 Resource Mobilization

The issue of “leveraging” resources is discussed in section 3.2 of this Report. The Panel is of the view that the key aspect of resource mobilization is the need to bring new resources from within and beyond the System, rather than focus on re-channeling existing Center resources. It is anticipated by the Panel that the SLP will primarily get its funding by means of directed resources from the current investing members of the CGIAR but there may be yet unexploited sources presently outside of the System.

6. SLP Program Activities (Tier 3)

6.1 The Portfolio and its Performance

The focus of the terms of reference with regards to program activities under Tier 3, is a review of the quantity and quality of the outputs of SLP activities, as well as the processes in place for monitoring such outputs, and recommendations on how to improve potential impact. The Panel will first briefly comment on the appropriateness of those activities and the overall coherence of the program, issues raised elsewhere in the terms of reference, before tackling those related to outputs and outcomes (impact). Appropriateness in this context is defined as how well each of the activities fits within the program focus, and addresses its objectives.

The Panel was requested (Appendix 1) to assess the effectiveness and efficiency of the SLP in achieving coherence in livestock-related research across the CGIAR. In the original recommendation of TAC concerning the objectives and funding of the SLP, the stated objective of the SLP was to build and strengthen linkages with plant-oriented centers, so as to develop integrated and coherent strategic and applied research and research-related programmes on feed development, natural resources management and associated policies. In other words, the focus was on livestock feed-related research, and not broader livestock-related research, as suggested in the terms of reference. The Panel's assessment will therefore be restricted to the original focus on livestock feed-related research, which is understood to be the intention in the terms of reference, because the mandate of SLP does not cover all livestock-related research such as listed in the ILRI MTP, which would include: livestock health, livestock genetics and genomics, livestock policy analysis, strengthening partnerships for livestock research as well as interactions between people, livestock and the environment.

An analysis of the SLP research portfolio (Table 1 that follows), showed that 6 of the 18 (33%) of the supported activities were strategic, while the remaining 12 (67%) were largely of an applied nature. The Panel finds this distribution quite acceptable. In terms of coherence and focus, most of the applied projects, 11 out of 12, dealt with livestock feed-related issues, investigating the utilization of browse (3), pastures (3) or crop by-products (5). The only project the Panel thought was out of place was the project on research and development of smallholder livestock production in Central Asia and the Caucasus. This latter as presented to the Panel is a diagnostic foray into Central Asia to identify research and developmental problems for which research funds could be subsequently solicited from donors. This activity might better have been funded from ILRI's core funds rather than by SLP. With regards to strategic research activities, 3 out of the 6 projects (SLP as a virtual network, development and use of molecular genetic markers for enhancing the feed value of crop residues, and Interaction of Policy and scale factors affecting smallholder livestock production in developing countries are clearly within the mandate and focus of SLP.

The Panel thus concluded that most of the SLP-funded projects passed the simple test of fit, in terms of addressing the program objective. Moreover, the Panel finds the focus of research activities suggested by TAC, i.e., livestock feed, NRM and related policy issues appropriate and that SLP projects stayed within those parameters. Finally, the above analysis suggests that SLP,

to a large extent, effectively achieved the objective of developing an integrated and coherent applied research effort on livestock feed-related issues, but that it could use a finer discriminatory mechanism to select appropriate strategic research activities.

Table 1. SLP Projects: Strategic vs Applied		
PROJECT	TYPE	
	Strategic	Applied
Utilization of forage biodiversity for dairy production and natural resource management in African highlands		✓
Improving legume-based feeding for smallholder dual purpose cattle production in tropical Latin America and the Caribbean		✓
Production and utilization of multi-purpose shrubs in West Africa/Central Asia-North Africa and the Sahel		✓
Improving crop-livestock systems in the dry savannas of West Africa		✓
Development and use of molecular genetic markers for enhancing feed value of crop residues	✓	
The maize crop as food, feed and fertilizer in intensifying crop-livestock systems in Eastern and Southern Africa		✓
A set of ex-ante impact assessments of research on crop residues in mixed farming systems		✓
Improving productivity in mixed crop-livestock farming systems in South Asia	✓	
Enhancing livestock productivity while protecting mountain ecosystems		✓
Interaction of Policy and scale factors affecting smallholder livestock production in developing countries	✓	
Research and development of smallholder livestock production in Central Asia		✓
Human population growth and poverty mapping: implications for natural resource management	✓	
The role of Agro-forestry and livestock strategies in building assets and improving livelihoods		✓
Participatory development of legume-based technologies for intensifying livestock systems in Latin America		✓
Wheat and weeds, food and feed in the highlands and mountains of sub-Saharan Africa and Latin America and the Caribbean		✓
Food/feed systems and improved livelihoods of the poor in rainfed lowland and upland areas of Southeast Asia		✓
The SLP as a virtual network (vNetwork) and virtual laboratories (vLabs)	✓	
Transregional analysis of crop-livestock systems	✓	
TOTAL and (% OF TOTAL)	6 (33%)	12 (67%)

Note: Some of the “applied” projects do have some sub-components that are of a strategic nature.

The quantity and quality of outputs. The SLP as implemented is a relatively recent program. Its very first beneficiaries (3) received research grants in 1997-98. More grants were disbursed subsequently, but most were clustered around 1999-2000. Even so, the program has produced a number of outputs, which for purposes of analysis, are classified here as tangible/quantitative or intangible/qualitative.

Tangible/quantitative outputs. A list of publications (Appendix 8) was prepared by the SLP coordinating unit, with input from the respective project leaders. A limited number of this latter category of outputs have been published in refereed journals, but most were reports and publications in conferences and workshop proceedings. A number of articles are in press, and no doubt many more articles will be published in refereed journals as the program matures. The SLP is currently developing an interactive database—the virtual SLP, which will link the geographically dispersed SLP research teams to one another and to larger science groups for information exchange and sharing. This promises to be an important SLP output. A number of SLP projects have produced such tangible outputs as GIS maps. An example is the GIS maps produced by the ICRAF/ ILRI MOSD³ GIS group showing recommendation domains for two fodder species, *Calliandra calothyrsus* and *Desmodium intortum*. The ICRAF-led group that provided the data indicated that these maps could be useful in guiding dissemination efforts.

Intangible/qualitative outputs. SLP activities have resulted in a number of qualitative benefits such as: the partnerships established among the various project teams; processes worked out by the teams for moving collaborative efforts along; and benefits reported by farmers as they adopt interim results while continuing to work with the research teams, to fine-tune technologies and approaches being tested. As time goes on and the activities mature, some of these intangibles should be appropriately documented for sharing with others.

Methodologies, technological innovations. The Panel is not aware of confirmed methodological or technological innovations, but believes that a number of the SLP-facilitated activities show promise of developing, or at least fine-tuning techniques and approaches sooner or later. Potential candidates are the projects on marker-assisted selection of feed quality traits of cowpea and millet residues. Such markers will then be used in crop breeding programs to improve residue quality. Cowpea and millet will be used as models, where the sequences and probes could also be used by other centers for improvement of other legumes such as groundnut and lentil, and cereals such as sorghum and maize. Traditional breeding and selection approaches are also being used to select cultivars of important food/feed crops with superior feed quality traits from among existing germplasm pools held at partner Centers and NARIs.

Monitoring and enhancing quality of output. The Panel is not aware of any specific mechanism put in place for monitoring and enhancing the quality of outputs of the various activities. It is clear, however, that the quality of outputs would depend importantly on the quality of inputs. The enhanced peer review mechanism suggested by the Panel may therefore contribute to enhancing the output quality. A peer review of final reports may also contribute in some way and this should be done through publications in peer-reviewed journals. It is also suggested that, at the project level, a systematic feedback of interim results to target

³ MOSD - Market Oriented Smallholder Dairy project

beneficiaries, particularly for applied research activities, may contribute significantly to output quality if output quality is viewed in terms of usefulness to, and potential impact on, beneficiaries.

Recommendations on ways in which impact may be augmented. A number of things have been and can be done to promote and increase the impact of research activities and results.

(a) Efforts should be made to understand the factors that affect the uptake and utilization of research results, in order to use them to pave the way for adoption and utilization. A number of SLP projects focused on ex-ante assessments are already moving along these lines. Another example from the portfolio of SLP projects adopting this strategy is the ICRAF-led project on the utilization of forage “biodiversity” for dairy production. This project was designed to stimulate the adoption of the developed technologies beyond project sites. Following the reported successful rate of adoption (briefly observed in the field by the Panel), the team has decided to identify and evaluate factors responsible for such rapid adoption, in order to use them to promote increased adoption and impact of these and other technologies.

(b) Communication tools that are appropriate for targeted communities should be identified and used to disseminate results in order to promote uptake and hence impact on the beneficiaries. This strategy has been adopted by the SLP project on improving dual-purpose cattle production in tropical Latin America led by CIAT. In this instance, the team produced an 11-minute video to present the experiences of a farmer who adopted *Cratylia* and *Arachis*-based technologies, and who by so doing doubled family income. A judicious distribution and utilization of this communication tool within and beyond the farmer’s environment may stimulate adoption and enhance impact on new farmers. A variant of this approach is to use and encourage farmer-to-farmer visits to spread the word.

(c) To the extent possible, bottlenecks to the adoption of technologies should be tackled to increase impact. The SLP project in West Africa is in the process of using this approach to tackle the issue of access to fertilizer, since the basic assumption is that a minimum set of inputs is essential for the technology being developed to have an impact. Fertilizer application is one of the inputs identified and utilized, and the team is working on innovative ways to alleviate this bottleneck and enhance the impact of a promising technology.

(d) In addition to the above-listed set of technology-based efforts, the vNetwork under development, together with ILRI’s own projects aimed at developing new web- and CD-based training materials, should have a large multiplicative effect over the medium term as these materials reach the intended university and professional circles.

These recommendations are, of course, not new ideas, and the Panel has striven to illustrate them with on-going examples within the SLP portfolio of projects, to make the point, and encourage the teams to continue experimenting with these ideas and to develop new ones.

6.2 Program Activities

As indicated above, program activities (projects, workshops and training) were reviewed on the basis of the following criteria: appropriateness, approach (holistic, participatory, multi-locational), partnerships and training activities, communication and information sharing, as well as outputs and outcomes.

Appropriateness has to do with how well each of the activities fits within, or addresses program focus and objectives. The SLP focus and ultimate objective is to develop appropriate research and related activities on livestock feed development and utilization, on natural resource management and on a supportive policy environment. As indicated above, a critical review of the portfolio of projects receiving catalytic funding from SLP showed that not all of the projects passed this simple test of fit. Two clear examples of such projects are: human population growth and poverty mapping with implications for natural resource management led by ILRI, and research and development of smallholder livestock production in Central Asia coordinated by ICARDA. The majority of the projects thus appeared quite appropriate, and a review in some detail of a few of such projects is presented in Appendix 6, using some of the criteria described above. This Report does not attempt a description of the SLP portfolio that is in any way balanced or comprehensive, and for such details, readers are referred to the SLP Biennial Reports.

7. The SLP Program in the Future (Tier 1 Revisited)

7.1 The Need for and Continuing Relevance of the SLP

This assessment is broken into its two component parts, the need for the SLP on the one hand, and its continuing relevance on the other hand. Is there a need for the SLP? This question is best tackled by first answering another question - is there a need for systemwide programs. Some eight years ago, TAC provided some answer to that question by recognizing that the System needed to deal with a number of issues that transcended the individual interests and mandate of commodity-oriented Centers. These issues required different strengths, expertise and comparative advantages that needed to be pooled together through appropriate collaborative mechanisms. The systemwide programs responded to such needs for inter-center collaboration and the sharing of expertise, knowledge and information. The need remains strong, if not even stronger today, given the paradigm shift towards an integrated systems approach that responds more effectively to the needs of target beneficiaries, who for the most part are not specialized producers. By the same token, a systemwide livestock program that, guided by its objective, focuses on the crop-livestock interface with particular emphasis on livestock feed and related resource management and policy issues, appears necessary and justified, more so that a number of livestock-related issues have been, and continue to be of concern and relevance to the mandates of plant-oriented Centers.

These Centers have, after several years of research, realized some modest increases in the production and productivity of mandate commodities such as cereal and legume grains. More often than not, these increases in grain yields are accompanied by increases in by-products such as fodder, haulms and stovers, particularly when research responded to the request of farmers for

dual-purpose varieties of such crops. Productive uses of such by-products that do not compromise the environment needed to be developed, hence the growing interest in recycling through livestock with the added value of producing manure that could be used to improve the soil. The SLP provided a formal multi-center collaborative mechanism that responded to this need. This mechanism allowed for a medium-term strategic approach to a common objective, rather than what would most likely have been less effective, ad hoc, bilateral collaborations between ILRI and the other Centers.

Is this need for this Systemwide Livestock Programme, recognized and responded to nearly a decade ago, of relevance today, and in the near future? Evidence exists from various sources, and recently from Delgado et al. (1999),⁴ that demand for meat and milk will continue to increase over the near future in developing countries, stemming from rising incomes and a rapidly increasing population growth, and fueled by a rapid rate of urbanization. The hope and expectations are that the resource-poor rural dwellers will benefit from this expected rise in demand for livestock products particularly meat and milk, since two-thirds of the rural poor apparently keep livestock, and rely mainly on mixed crop-livestock production systems that, according to CAST (1999),⁵ provide over 50% of global meat and over 90% of milk, respectively.

These systems, which are currently the most common form of production systems in developing countries, will continue to be predominant for the foreseeable future, because of increasing population growth and the accompanying reduction in land availability. Previous analyses have shown that the provision of adequate quantity and quality of feed year-round is a major system challenge, particularly for the small-scale and resource-poor producers, thus offering opportunities for research and development interventions to focus on alleviating such constraints. In other words, research and related activities on livestock feed development and utilization, and accompanying resource management issues, particularly within the mixed crop-livestock systems are of great relevance and importance, and will continue to be so for a long time. This underpins the goals of the SLP, which therefore remains relevant.

7.2 On Balance among the Developing Regions

The SLP has supported activities in a wide cross-section of the developing world where livestock are important. This reflects the geographic dispersion of collaborating Center programs, as well as conscious policy in SLP project selection. Planned work supported but not yet funded will help to complete the geographic balancing in progress. The Panel has no criticism of the regional “balance” so far achieved, although it does wonder about the relevance of this aspect as a criterion of SLP performance. The Panel considers other criteria such as quality of science and the strategic nature of projects to be rather more important.

7.3 On Core versus SLP balance

⁴ Delgado C.L. et al. (1999). “The coming livestock revolution”. *Choices* 4th Quarter 1999, 40-44.

⁵ CAST (Council for Agricultural Science and Technology) (1999). *Animal Agriculture and Global Food Supply*. Task Force Report No. 135, CAST, Ames Iowa.

SLP has made a valuable, and widely appreciated, contribution towards the integration of relevant IARC research activities. Plant-oriented Centers have contributed variable amounts of core resources via senior and junior staff, lab and field facilities, and others. To that extent, they have also contributed to the development of a wider implementation of ILRI's global agenda. Similarly, SLP has increased ILRI's institutional presence outside Africa, while at the same time has increased the awareness in some plant-oriented Centers, which are receiving valuable feedback regarding the multipurpose nature of their products (cultivars and improved germplasm) as perceived by smallholder farmers in crop-livestock systems.

As such crop-livestock systems intensify, and feed constraints become even more binding, markets for crop residues develop. Thus inter-center investments in research on feed quality improvement directly adds to the value of some mandate crops of plant-oriented Centers.

In the above context, and considering the incipient on-farm impact of some of the SLP-led projects, the involved Centers should carefully consider modest increases in the core resources allocated to this systemwide program and its activities, since it is clear that multiplicative effects can be effectively derived from multi-center cooperation. This is also applicable to ILRI, considering that some of its core programs, such as the "Livestock Feeds and Nutrition Project", "People, Livestock and the Environment Project", "Systems Analysis and Impact Project", and the "Livestock Policy Analysis Project" can derive tangible and intangible benefits from inter-center cooperation. Similarly, SLP projects would benefit from a larger involvement of ILRI's core projects in strategic research to support and backstop the design, analysis and interpretation of field and on-farm research at the various sites.

7.4 On organization of SLP

SLP was created following the initial TAC recommendation that ILRI should assume a "strong convener" role. TAC did not further define the strong convener concept but it can be inferred that it implied considerable scientific leadership, in addition to coordination of overall activities. The need for a carefully balanced approach between scientific leadership and coordination is still valid and necessary, even after the initial phase of implementation of an SP such as SLP, given that it aims to link Centers synergistically, and that several of the Centers have no tradition or mandate in livestock-related international research but can benefit from it.

7.5 Recommendations on future objectives

As is clear from the preceding few paragraphs, the first general objective is fine and is still valid, and in the opinion of the Panel need not be changed. The second general objective concerning "leverage", however, needs to be modified, perhaps along the following lines. "Catalyze the utilization of resources invested in Center programs, Ecoregional initiatives and other Systemwide Programs, and lever additional resources in order to most effectively address development-oriented livestock research". This will reflect the way the SLP mobilizes existing

System and Centre resources, and encourages the sourcing of new and additional financial resources from outside the System.

8 Summary Recommendations and Overview

After a false start, the SLP was effectively implemented, with reduced financial expectations, over the period 1997-98, and the first set of projects got underway in the latter year. The financial circumstances, the fact that SLP was expected to bring on board many Centers with little or no previous experience in livestock-related research, and that in addition had to cooperate amongst themselves in developing a common agenda, explain the “birth pains” of this trend-setting CGIAR program.

As can be inferred from the previous parts of this Review, the SLP has met with considerable success on several fronts. The majority of the CGIAR Centers are presently involved to a larger or lesser degree in a fairly comprehensive portfolio of projects. The SLP initially explored various approaches towards governance and settled into a workable mode that is generally agreed upon by most participants. It has also been successful in launching a credible set of projects, and in attracting a modest level of additional financial support.

Having said that, it is also clear to the present Review that some changes are now required to fully achieve the objectives of the program, and to make sure that the projects it finances and promotes have the required scientific quality. Briefly, the Panel's recommendations and suggestions are:

- ILRI needs to continue to exert its role as strong convener of the SLP, by providing scientific leadership and overall coordination, carefully balanced with ample consultation with the other Centers. Scientific leadership is particularly important to strengthen and maintain the credibility of the Program and to assure quality outputs;
- The Board of Trustees of ILRI and its Program Committee need to provide active oversight of the SLP, and make sure that the somewhat subjective line that separates ILRI's own global agenda and that of the SLP remains distinctive;
- The governance mechanism should be strengthened and consolidated, via strengthening the LPG and its processes, with better continuity in membership and expanded review mechanisms, as set out in section 5.2;
- Continuity in membership is essential to further reduce the currently acceptable transaction costs, and to allow for more frequent and expedient electronic communication. Similarly, members of the LPG should be adequately empowered to assure rapid implementation of the Group's decisions and effective monitoring;
- Project assessment should be subjected to independent peer review, as suggested in section 2;

- Projects selected for funding will not only have to be approved on the basis of scientific excellence, but also need to provide the “added value” expected from a systemwide program while excluding those that clearly belong within the mandates of individual Centers. In this respect, it is expected that the members of the LPG will consult with their respective Directors of Research to assure that the proper sorting of projects is made. This is particularly important in the case of the ILRI’s representative, who has to ensure in consultation with the ILRI DDG-P that the SLP projects do not substitute (or even appear to substitute) for ILRI’s core program;
- Value added by SLP-sponsored projects should be explicitly documented in the project publications and in SLP reports;
- The lead Center, as well as the other Centers, need to provide timely scientific backstopping to activities carried out by the respective consortia and assortment of national institutions (section 5). It is therefore important for members of the LPG to interact with their respective Directors of Research, and that the SLP Coordinator succinctly informs Centers’ Directors of Research of issues pertaining to strategic research that need their attention;
- Participating IARCs have to ensure that feedback from field and on-farm experimentation is rapidly internalized and that it generates the required follow-up in terms of strategic research carried out by themselves and by collaborating NARIs. The mechanism suggested in the previous recommendation should satisfy this requirement;
- As further progress is made in developing the portfolio of research projects, the LPG, in consultation with the relevant Directors of Research, will have to make sure that an appropriate dialogue amongst SLP projects, and between SLP projects and Ecoregional Programs takes place to maximize the effectiveness of the resources allocated to these activities;
- In order to avoid a loss of the investments made to date, and to meet the expectations created by the development of a rich and promising portfolio of projects, as well as the development of exciting new ones, adequate funds (which the Panel feels could usefully be at \$3-4 million a year) should be provided to the SLP. Lest this be seen as an open-ended commitment, the continuing relevance of such a continued program should be reviewed after, say, a further five years of operation.

The above list represents an incremental set of recommendations derived from experience accumulated during the past three and one-half years of what has largely been a new thrust for the CGIAR System, and which had limited previous experience in working as a unified and coherent whole, and even less systemwide trajectory in the field of livestock-related research. The Panel thus expects that the lessons derived from this program will have positive repercussions across an increasing spectrum of CGIAR-sponsored multi-Center research activities.

APPENDIX 1 - THE TERMS OF REFERENCE

Structure of Review

The review be undertaken in three tiers dealing with program objectives, program performance and program activities.

Tier 1: Programme Objectives: Review at this level will consider the original concept and objectives promulgated by TAC in relation to the evolving CGIAR. Consultation with previous and current members of TAC, Centre Directors and with other appropriate CGIAR members (Donors) will be necessary.

Tier 2: Programme Performance: Review at this level will consider ILRI's role as the convenor, governance and efforts to operationalise the SLP. Consultation will include ILRI's, partner Centers' management and with the Livestock Programme Group.

Tier 3: Programme Activities: Review at this level will consider performance at the activity level in relation to program goals and could require visits to selected projects.

Programme Objectives (Tier 1)

1. Assess the original concept and relevance of SLP's objectives, priorities and strategies to the goals of the evolving CGIAR.
2. Assess the need and continuing relevance of the SLP and make recommendations on future objectives, the appropriate balance among regions (SSA, CAS-WANA, LAC and Asia), its organization and particularly, its funding.

Programme Performance (Tier 2)

3. Evaluate the effectiveness of ILRI's convening role, including the relation between the SLP and ILRI's own research agenda taking account of the changed funding expectations, the synergies generated, and the transaction costs incurred.
Assess the effectiveness and efficiency of the SLP with respect to the original objectives:
 - “Build and strengthen linkages with plant-oriented centers so as to develop integrated and coherent strategic and applied research, and research-related programmes”
 - “Lever CGIAR resources invested in center programmes, Ecoregional initiatives and other Systemwide programmes in order to most effectively address development oriented livestock research.” and
 - mechanisms used to set priorities referred to above
 - achieving coherence in livestock related research across the CGIAR System and other stakeholders including NARS

- adding value to the System's on-going research, to the benefit of knowledge relevant to the livestock sector.
4. Assess effectiveness of SLP's governance, decision-making, organization, accountability, resource mobilization and allocation, and mode of operation, including identification of constraints in implementing the program and lessons learnt. Comment on the strengths and weaknesses and make recommendations for improvements in these aspects.

Programme Activities (Tier 3)

5. Evaluate the quantity and quality of outputs from SLP activities including projects and their actual or potential impact:
 - Publications
 - Methodologies, technological innovations
 - Achievements and actual/potential impact to-date
 - Processes in place for monitoring/enhancing quality of outputs/impact.
 - Make recommendations on ways in which impact may be augmented.

APPENDIX 2 - THE PANEL

Jock R. Anderson (Chair) was raised on a crop-livestock farm in Queensland, studied agricultural science at the University of Queensland and later economics at the University of New England, Armidale, where he stayed on as a staff member (as Professor of Agricultural Economics) until 1989, with teaching responsibilities in applied economics, including risk analysis. He joined the World Bank in what is now the Rural Development Department, where after focusing on agricultural research policy and operations evaluation, he now serves as Adviser for policy and strategy. He is a Fellow of the Australian Institute of Agricultural Science, of the American Agricultural Economics Association and the Academy of the Social Sciences in Australia. He has been engaged in diverse review activities in the CGIAR System over the past 20 years, including directing the mid-80s Impact Study of the System.

Olanrewaju Babatunde Smith was trained as both a Veterinarian (DVM., Diploma in Parasitology-University of Liege, and Prince Leopold Institute of Tropical Medicine, both in Belgium) and as an animal scientist (MSc and PhD in Animal and Poultry Nutrition - University of Guelph, Canada). Worked in Nigeria until 1989, first as a researcher at the National Veterinary Research Institute with a focus on vaccine development, and then as a faculty member at the Obafemi Awolowo University (OAU) where he obtained the chair of Animal Production and Health, following 11 years of teaching, research and veterinary practice responsibilities. His research focus was on the expansion of feed resources for livestock, and the development of health care systems for small ruminant producers in Africa. In 1989, he joined the International Development Research Centre (IDRC) where he worked in various research programmes, including Animal Production Systems, Community Management of Fragile Ecosystems, Desertification and Land Regeneration, and Sustainable Production and Policy Systems, and rose to the rank of Regional Representative of IDRC for the West and Central Africa, based in Senegal. He is currently based at the IDRC headquarters in Ottawa, working in urban agriculture and land and water management and utilization in stressed ecosystems research programmes. He is also currently serving as Chair of the Committee on Science and Technology, of the United Nations Convention to Combat Desertification.

Raúl R. Vera, Uruguay, resident in Chile. B.S. in Agricultural Science, University of Uruguay; M.S. Animal Science, University of California, Davis; Ph.D. Nutrition, with minors in Physiological Chemistry and Biomathematics, University of California, Davis; sabbatical leave in Systems Group, Reading University. Worked as research assistant in Uruguay; associate professor of Grassland Science (undergraduate course), and later Animal Nutrition, in Universidad Nacional del Sur, Bahía Blanca, Argentina; associate professor of Ruminant Nutrition (two postgraduate courses) at Federal Universities of Lavras (UFL), and of Minas Gerais (UFMG), Brazil. Worked briefly for FAO, at EMBRAPA's Dairy National Research Center, Juiz de Fora, Minas Gerais, Brazil. Spent 16 years at CIAT, initially as senior scientist, livestock production systems, Tropical Pastures Program and later as leader of that Program; later appointed leader of the Tropical Lowlands Program, and also a one-year spell as acting DDG for Research in Natural Resources Management. Currently part-time researcher in the Animal Science Department of the Catholic University, Santiago, Chile; partner of AGROSIS Ltd., a recently created software development firm; and occasional agricultural consultant. Main areas of professional interest include the analysis and simulation of livestock production systems

and their interactions with natural resources, ruminant feeding strategies, development of decision support systems, and more recently, distance education in animal sciences.

APPENDIX 3 - ITINERARY OF VISITS

(a) **24/25 April Panel Briefed on the SLP at World Bank/CGIAR Secretariat**

(b) **Dr JOCK ANDERSON:**

**FAO
CGIAR TAC Secretariat
ICRISAT
ICARDA**

Program for the visit of Dr. J. R. Anderson, SLP External Panel Review Member and Chair, to ICRISAT and ICARDA.

Monday 30 April MEETINGS AT ICRISAT

William D. Dar, DG

J. Lenne, DDG

P. Parthasarathy Rao and M. Blummel (Crop- livestock systems in South Asia)

V. Mahalakshmi (SLP virtual network)

Suresh Pandey and Bandhopadhyay (Crop health and quality of residues)

J.H. Crouch (Acting PD)

C.T. Hash (Molecular genetic markers for enhancing feed value)

Belum Subba Reddy (Dual-purpose sorghum)

P. Pathak (NRMP, Crop-livestock integration)

M. Blummel (ILRI – SAP).

01 May HYDERABAD to DAMASCUS to ALEPPO

02 - 03 May MEETINGS AT ICARDA

Wednesday, May 02

13:00-18:00 Field trip to Khanasser Valley and Aleppo steppe Drs. A. Bruggeman, M. Bounejmate, F. Ghassali, N. Batikha, and A. Termanini.

Introduction to ICARDA integrated Research at Khanasser Valley

Impact of Barley-shrubs inter-cropping in the farmer's fields

Visit to Odami Reserve Nursery, Steppe Department rained out, so instead visited government factory making pitting machines for reseeding degraded rangeland with native shrubs

Thursday, May 03, 2001:

Visit to the Range Nursery at ICARDA: Dr. M. Bounejmate, Mr. A. Khatib

Discussion on SLP Caucasus: Dr. M. Bounejmate

Discussion with Management

Discussion and Visit to the Livestock Unit: Dr. L. Iniguez

05 - 06 May FIELD VISITS

Friday, May 04, 2001:

Damascus to Paris to Casablanca

Aridoculture Center, Settat: Presentation of the research program on shrubs and visit of experiments Dr. A. Chriyaa, Dr. El Gharous, Dr. Mazhar, Dr Arifi, Dr. El Mzouri, Dr. El Aich To Park Hotel in Settat. **Working dinner** with the agro-economists:

Moussaoui, Bendaoud, Serghini, Boughlala

Saturday, May 05, 2001:

Field visits to Doukkala, Rhamna, Dahra, Sidi Boumeهدي, Dr. A. Chriyaa

Working dinner with Mr. Hassani: Director of Agricultural Department of Settat Province; MM: Sabri & Daq from forest service; Mr. Hammoudi: Head of Range improvement service at the Regional Department of Agriculture of Eastern Provinces; Mr. Labied: President of Pastoral Cooperatives Union of Tendirara; Mr. Maataoui Mostapha: Farmer and President of Sidi Boumeهدي Rural Commune, (SBRC); Mr. Mario Melanesi: Head of CEFA (Italian NGO) at SBRC.

May 6- 7, 2001

Travel from Casablanca to Frankfurt to Amsterdam to Nairobi

(c) Programme for the visits of Dr. Raúl Vera to CIAT (Cali & Costa Rica) and to CIP (Lima)**30 April**

Joachim Voss

Aart van Schoonhover

Carlos Lascano

Federico Holmann

Jacqueline A. Ashby

CIAT - CALI

Director General

DDG-Research-Genetic Resources

Leader, Tropical Forages Project

Tropileche Consortium/SLP project

DDG-Research NRM

01-03 May**CIAT - COSTA RICA**

May 01, pm

Meeting with part of Tropileche team: Carlos Hidalgo (Ministry of Agriculture and Livestock, MAG, Research Department); Carlos Jimenez and Luis Pineda (University of Costa Rica); Pedro Argel (CIAT) and F. Holmann

May 02

Field Visit, accompanied by F. Holmann, P. Argel, C. Hidalgo, and Jonathan Wadsworth (DFID, Costa Rica office)

Visit to Escuela Centroamericana de Ganaderia, ECAG

Frank Romero, Director

Cratylia fodder bank

Grazing experiment

Germplasm collection

Visit to MAG Regional Extension Office, at Esparza
Jose L. Araya, regional head

Visit to Joel Matamoros dairy farm

Cratylia silage

Cratylia fodder bank

Leucaena fodder bank

Leucaena/Brachiaria pasture

Grass/legume pasture

Visit to Toño Lopez farm

Cratylia fodder bank

Improved pastures

Multipurpose trees evaluation

04 May

Hubert Zandstra

Wanda Collins

Hugo Li Pun

CIP - LIMA

Director General

DDG-Research

DDG-

SLP Team presentations:

Roberto Quiroz

CIP's Project 8A "Integrated NRM in Mountain Agroeco-
systems"

Carlos Leon Velarde

SLP project "Enhancing crop-livestock productivity while
protecting Andean ecosystems"

Raul Cañas

(BTA S.A., Chile) - vLabs

Abel Rojas

Ph.D. candidate, U. of Copenhagen – Milk production systems in
the Bolivian Highlands

Erick Murillo

Methane emissions by cattle

Qiumei Ji

Yak-based production systems

Cesar Ibarra

Applications of artificial intelligence to livestock research

S. Garcia and J. Guerrero

M.S. candidates, demonstration of virtual worlds

(other members of team present: W. Pradel, P. Obastinga, C. Romero, M. Cruz, C. Barrera)

General discussion with team

Hugo Li Pun

wrap up session

06 - 07 May

LIMA

NAIROBI

(d) Programme of visits of Dr. Ola Smith to IITA & ICRISAT (West Africa)

26- 27 April

WASHINGTON DC

LAGOS

Saturday 28 April

Lagos to Ibadan

Sunday 29 April**Ibadan to Kano (IITA/ICRISAT)**

Visit to on-farm feeding trials at Bichi
P.Hiernaux, A.Dan Gomma, S.Tarawali

Monday 30 April

0800hrs Depart Prince Hotel for IITA Station

Presentations at IITA Station

Presentations including:

- Overview of cowpea research at IITA Kano (BB Singh)
- Cowpea physiology research (T. Matsui)
- Striga research (A. Emechebe)
- Crop-livestock systems research overview (S. Tarawali)
- Progress in Nigeria (S. Tarawali)
- On station livestock feeding (A. Musa)
- Crop-livestock research in Niger (P. Hiernaux)

Tour of IITA Kano Station

Visits to Minjibir research farm Dry season cowpea

Wrap up discussions

Tuesday 1 May**Kano to IITA Ibadan**

courtesy call on B. Booth

Wednesday 2 May

courtesy call, L. Brader

Meeting with SLP crop-livestock scientists, ILRI Conference Room

Presentations including:

- Brief overview (S. Tarawali)
- Research in Mali (S. Tarawali, B. Shaprio)
- Economic studies (V. Manyong)
- Impact studies (N. de Haan)
- Data analyses and archiving (S. Nokoe)
- General discussion
- ICRISAT and SLP (B. Shapiro)
- IITA and SLP (D. Keatinge)
- ILRI (West Africa) and SLP (T. Williams)

(Also present at this meeting: T. Williams, J. Niezen, A. Larbi, BB Singh)

Meeting with SLP cowpea genomics team, ILRI Conference room, S. Tarawali,

C. Fatokun and J. Machuka

Thursday 3 May

Meet T. Williams and B. Shapiro

Friday 4 May

O. Smith meets with B. Shapiro and D. Keatinge

06 May

LAGOS

NAIROBI

(e) **07 – 12 May PANEL IN NAIROBI (J. ANDERSON, R. VERA, O. SMITH)**

MEETINGS AT ILRI/ICRAF & FIELD VISISTS

08 May

The changing CGIAR & the SLP	H. Fitzhugh
Ex-ante Impact studies	P. Thornton
Poverty mapping: Implications for NRM	P. Thornton
Maize as food, feed, fertilizer	P. Thornton
Improving feed value of crop residues	S. Fernandez
A framework for a global fodder initiative	S. Fernandez

09 May

Trans-regional analysis of C-L systems	S. Staal
SLP as a vNetwork	M. Smalley
General discussions on presentations/SLP etc	

Meeting with ICRAF Management at ICRAF H.Q.

Project Presentation (ICRAF Led Project)

10 May Field Visit to Embu

14 May

Panel Travels to ILRI-Addis

14 – 15 May

SLP Secretariat: Drafting Report

15 May

Presentation of preliminary draft report

APPENDIX 4 - HISTORICAL PERSPECTIVES ON ILRI AND SLP:

A Note from the ILRI DG

DG01/MEMO/373

MEMORANDUM

Date: 10th May 2001
 To: Jock Anderson, Ola Smith, Raul Vera
 From: Hank Fitzhugh
 Subject: **Relationships among crop-livestock research, ILRI Core Program and SLP**

I have reflected on recent discussions and believe there is some confusion about the priorities given to crop-livestock research by ILRI vis a vis the Systemwide Livestock Programme and ILRI's core research in nutrition, feed production and utilization, forage genetic resources, rumen ecology, and the livestock related integrated natural resource management. This confusion arises from the partial confounding of principal factors at the time ILRI began operations in January, 1995.

These key factors were:

General agreement by stakeholders that significant synergies would be captured by well-organized inter-center initiatives. Emphasis should be given to integrated natural resource management research, requiring closer collaboration with national partners because of regional, even local character. TAC responded with the recommendation to establish Systemwide and ecoregional programmes.

Strong and generally held view by stakeholders of need for closer integration between crop and livestock research in the CGIAR. This view was articulated by TAC with recommendation that the new institute give emphasis to collaboration with the crop centers.

Anticipating the establishment of ILRI, TAC assumed combining the TAC recommended share of funding for ILCA (approximately US\$ 20 million) and for ILRAD (approximately US\$ 12 million) in the 1994-98 medium term priorities and strategies. Of this, TAC recommended that US\$ 4 million of combined share promote inter-center collaboration on crop-livestock systems research, with attention to establishing inter-center collaborative research outside Africa.

Competitive grants. Among stakeholders in the CGIAR, there was growing interest in exploring the mechanism of competitive grants to encourage innovation, inter center collaboration, and improve cost-effectiveness. ILRI's Board Chairman, Neville Clarke had established a successful competitive grants program within the USDA. With the expectation that US\$ 4 million funding would be earmarked for the Systemwide livestock program, ILRI decided to use the competitive grants mechanism to encourage the crop centers to join in collaborative research and to provide significant matching resources. We anticipated the SLP grants would leverage significantly greater resources from ILRI, from other centers, and from their national partners.

It is important that the panel comment separately on these different factors, recognising that they are confounded, but still require separate attention. There is danger of throwing the baby out with

the bathwater. What are your separate views on the Systemwide mechanism to promote inter-center synergies?

A few comments on these key elements.

Globalizing livestock research in the CGIAR with emphasis on collaborative research with the crop centers. Starting in 1994, even before ILRI officially began operations, we began discussions with scientists and managers from centers in Asia and Latin America. ILCA already had significant collaboration with IITA and ICRISAT in West Africa and to a lesser degree with ICRAF in East Africa. Inter-center collaboration concentrated on livestock-related elements of the crop and natural resource management research priorities in the other centers. For example, there was particular interest in crop residues, multipurpose food-feed crops and cropping systems, nutrient cycling, and forage genetic resources. These priorities for crop-livestock collaborative research consistently came out in the series of global and regional (south east Asia, south Asia, WANA, and LAC) consultations completed in 1995). At the same time, we were developing organization and the SLP in consultation with the same centers both in and outside sub-Saharan Africa. The development of ILRI's collaborative research with crop centers, including placing ILRI scientists in other centers, was separate but linked with the development of the competitive grant program for the SLP. We anticipated crop centers could provide stronger leadership to consortia bidding for competitive grants with support from the ILRI scientist based in the centers. CIAT and ICARDA already had some livestock scientist staff capacity.

As the modalities for the SLP competitive grant scheme developed, ILRI decided that we would not compete as a lead center, but that we would work with and through crop centers especially those convening ecoregional initiatives. As it happens, the best proposals for the competitive grants – as determined by the external review panel - were from CIAT, ICRAF and ICARDA, all of which having had a significant scientific livestock contribution in their concept notes and proposals. In addition, these three winning proposals all built upon significant on-going research activities by the lead center and national partners. A criterion for choosing the winning proposals was the extent to which the SLP leveraged significant matching resources from centers and their national partners.

The SLP and the competitive grant mechanism It was an ILRI Board decision, not a recommendation from TAC, to establish the competitive grant mechanism. Several on the ILRI Board, especially the chair, Neville Clarke had successful experience with competitive grant programmes. They knew that a necessary condition was consistent and adequate funding to ensure pledges of competitive grants.

In 1995, ILRI was reassured that the TAC recommended US\$ 4 million would be forthcoming, at least for several years. But then the CGIAR faced a financial crisis in 1996 when donors reduced contributions. The mode was changed for World Bank funding; i.e., donor of last resort to fill gaps in funding recommended by TAC. The timing could not have been worse. Reassurances on the US\$ 4 million would be forthcoming were predicated on the World Bank filling the gap, at least for 1996. The necessary condition on which the competitive grant mechanism had been established was not met.

In 1997, realizing that the competitive grant approach was not feasible, the LPG and ILRI Board agreed to change the process by which SLP grants would be awarded.

The “competitive grant mechanism” is history. The panel might comment about necessary conditions for success in a competitive grant program; however, the greater need is for the panel to review and comment on the LPG-determined grant awarding mechanism now in place. Is it appropriate and should it continue if funding remains uncertain?

Earmarking. Some donors earmark funds channeled through the SLP to certain types of research and/or to specific project activities and partners. Such earmarking essentially takes decisions out of the LPG about which projects deserve funding and the LPG responsibility for monitoring performance because generally earmarked funds often require their own donor-led performance evaluation.

Lessons learned. Experience with the SLP has yielded useful lessons for governance, management, co-ordination and implementation of inter-center activities. These lessons can be useful for other inter-center activities, including the GCPs.

The other major Systemwide program, SGRP, differs from the SLP. There was already a well-established network of scientists and centers working on plant genetic resources and genebanks. SGRP used this network as a base with the governance/management/co-ordination evolving from how these functions were handled by the network. In contrast, the SLP started from scratch.

The ILRI Board during 1994-96 debated the pros and cons of different governance structures. It was clear that there had to be a legal entity with fiducial responsibility for the funding provided to the SLP. The ILRI Board was the only established legal entity available and, therefore, had to take full legal and fiscal responsibility. This was why the Board took the minuted decision in 1995 that ILRI reserves were not to cover a shortfall in funding for the competitive grants. Either the donors or the World Bank last resort funding provided the US\$ 4 million for competitive grants, or the competitive grants could not be awarded. This decision by the ILRI Board was communicated to all centers before any decisions were made on competitive grants.

This Board decision was only on competitive grants. The ILRI Board agreed ILRI core resources and reserves would fully support ILRI’s contribution to inter-center collaborative projects on feeds, nutrition, and natural resource management.

ILRI’s scientific and support staff and operational funding to feeds nutrition, natural resource management research have steadily grown since 1995, including joint appointments with CIP, CIAT, IITA and full-time scientists posted at IRRI, ICRISAT Patancheru, ICRISAT Sahelian center, and IITA. ILRI has at least twenty full-time scientist-equivalents (including the half-time appointments) contributing to feeds, nutrition and natural resource management research. In addition, but not included in the 20, are agricultural economists contributing to benefit/cost analysis and policy research on feeds, nutrition, and natural resource management research; nor does it include the regional network co-ordinators and other scientists contributing on a part-time basis to these research activities.

ILRI's priority research – always with partners – on feeds, nutrition, NRM (including relevant Systems Analysis and Policy research) is described in Chapter 3 of Strategy to 2010 and in the logframes in the MTP (2001-3) and MTP (2002-4).

ILRI scientists partially supported by SLP grants are working in Asia, Latin America, WANA and sub-Saharan Africa. The SLP grants provide less than about 10% of the financial support to these scientists and their research. Therefore, ILRI “core resources” are leveraged by the SLP grant more than ten to one. The SLP grants also leverage significant matching contributions from other centers, but probably not at the level of that provided by ILRI from core resources.

c.c. Jimmy Smith, Salvador Fernandez, ILRI Directors

APPENDIX 5 - SUMMARY OF A SURVEY OF SLP STAKEHOLDERS

A survey of donors, collaborating Centers, National partners, and others concerned with CGIAR governance, such as TAC members was conducted by e-mail in the final weeks of April 2001. The response rate from donors and the "others" category was too low to report results from, so below is a summary of the larger number of responses in the second and third categories. Commentary offered by some respondents has been used in the main body of the Report.

IARCs

The following generalizations can be made from the replies received from 8 Center partners:

- There is a need to increase the sense of ownership among several of the Centers
- Crop-oriented Centers have clearly gained a better understanding of how crops and livestock interact
- The SLP Coordinator needs to take on an advocacy role and "market" the program to donors and other stakeholders
- Program activities/outputs need to increase the focus on the livestock-poverty linkages
- There is a specific need for closer ILRI-CIMMYT interactions, especially in Ethiopia

NARIs

From the numerous written comments made by NARIs, the following general themes can be identified:

- SLP has brought active ILRI collaboration to two-thirds of the respondents
- One-half of those NARIs that had prior collaborative activities with ILRI, feel that SLP is a more effective means of collaboration than past mechanisms
- NARIs claim that they have strengthened in various ways:
 - By introducing the FS approach and systems analysis
 - By introducing specific technologies
 - By sharing/introducing new methods
 - Expanded sharing of information
- Nevertheless, most NARIs would welcome:
 - Closer and more frequent interaction with IARC scientists linked to SLP
 - More training

Panel Comment: The Panel had mixed feelings about the value of such an e-mail survey of stakeholders but thought the costs sufficiently low to warrant the effort. In retrospect, since much of the same information came out of the Panel's direct contact with Center staff and NARI collaborators, it seems not to have been a particularly worthwhile experimental review procedure.

APPENDIX 6 - COMMENTARIES ON SPECIFIC SLP PROJECTS

The Panel had opportunity to visit several but not all projects, and certainly not all sites of project activity. After convening in Washington, DC, all members were able to visit IFPRI HQ, and the Chair was able to meet the IFPRI DG. Then the members went their separate ways described in Appendix 3, until they reconvened in Nairobi when they were able to jointly visit both ILRI and ICRAF, as well as field sites in Kenya. They completed the report writing in Ethiopia at the SLP HQ. The time was short, and the opportunity to write in detail on the individual projects was limited, and not particularly requested, given the clear impossibility of seeing all sites. Accordingly, this appendix is limited in scope, mixed in style, and diverse in detail, but is offered for the good of the cause, for some specific albeit selective Panel opinion on aspects of the SLP portfolio, and partly by way of providing some partial feedback to the many project staff who so generously shared their time to explain their programs.

1. Improving crop-livestock systems in the dry savannas of West Africa

This is an IITA led multi-institutional project that involves two other CGIAR Centers (ICRISAT and ILRI), with active participation of national institutions from Nigeria, Niger and Mali, the International Fertilizer Development Center (IFDC) and the Centre for Overseas Research and Development (CORD). It capitalizes admirably on previous work done at IITA and ICRISAT on breeding and production of sorghum, millet and cowpea by bringing in a strong livestock feeding component. The ultimate objective of the project is to develop a livestock feeding system built around residues of major crops grown in the different sub-ecosystems of the savannas. In the dry savanna, where millet is the major cereal produced, the feeding system is built around a millet-cowpea production system, while in the wetter savanna, it is built around the predominant sorghum-cowpea cropping system. In all cases, the maintenance and improvement of soil fertility appears to be a major concern that was addressed. The project adopts the philosophy that a minimum set of input in terms of fertilizer application and grain legume pest control is necessary, for a sustainable and profitable production system, and therefore addresses some policy issues around access to fertilizer, which may prove to be bottle necks. In other words, this set of projects addressing feed quality and quantity soil fertility management and some relevant policy issues appear appropriate as defined above.

Approach. The project is multi-locational, spanning two agro-ecosystems (dry and moist savanna) in three countries. On farm trials are on-going in several farms in two villages in Northern Nigeria; in three villages in Niger, and 3 villages in Mali, hence providing an opportunity to make a number of domain recommendations. The project is presented as being participatory in approach, and appears so from observations made on project sites, and interactions with farmers. The underlying or driving force of these set of activities appears to be the concept of ‘best bet package’, which as presented by the researchers suggested that the main consideration in determining the package was the maximum number of manageable variables or treatments in an on farm setting, but which in practice, as observed during field visits combines

some elements of farmers choice and decision making as dictated by prevailing socio-economic considerations and environmental conditions.

The project adopts a holistic approach comprising a technology development component, socio-economic analyses with some policy implications, and an impact assessment exercise with a strong potential feedback impact on the technology being developed. The basic technology being developed is built around inter-cropping improved varieties of sorghum, and improved dual purpose cowpeas in a spatial arrangement of 2 rows of sorghum to 4 rows of cowpea (an optimum crop geometry worked out in previous studies). Minimal input in the form of fertilizer to sorghum and pesticide treatment of cowpea is applied. This standard treatment is contrasted to local farmer practice using local varieties of the crops, with some other forms of combination in between these two treatments involving the use of local varieties with no inputs.

This agronomic component is complemented with on farm livestock feeding exercises in which harvested cowpea haulms and sorghum straws are fed to sheep or goats, in a ratio determined by the amounts available to the farmer rather than the classical approach of aiming for a particular minimum level of protein in the diet. The latter approach usually requires a supplementation with protein sources (groundnut cake etc), that more often than not the farmer could not afford, and hence would not adopt. This was an innovative approach. Some other striking features of the on-farm feeding experimentation are that farmers: could supplement their animals with any other feed resource they had, on condition that this was recorded, and sampled for analyses; could leave suckling lambs with the dams under experimentation, and could use goats or sheep as available. While this approach puts the farmer in the driver's seat it could also cause great analytical and interpretational nightmares. The researchers are aware of this and apparently have powerful analytical tools that could sort out various potentially confounding factors which would appear to be an uphill task. More pragmatically, they have set up a parallel better controlled on station feeding trials so that some of the intractable on-farm related factors could be accounted for.

Recently, at the beginning of the second year of the project, another technology component was grafted on the project, taking advantage of recent advances in genomics research. Encouraged by the fact that a 1% improvement in the digestibility of a crop residue could result in significant milk and meat outputs, the researchers plan to use these newer tools to speed up efforts to improve residue quality, by identifying materials with good residue quality. These technology development activities are complemented by economic evaluation of the system, nutrient flow studies to tackle the NRM component, and a nascent impact assessment study designed to ascertain whether, and to what extent farmers would gamble on the best bet package, document and quantify the benefits farmers derive from it, and facilitate faster adoption by providing some feedback that would drive the unpacking and packing of the package for optimum benefits.

Partnerships and capacity building activities. The project appears to have been built on a solid partnership that involves several institutions, each bringing some expertise and comparative advantage to the group. IITA, the lead institution provided expertise in the areas of plant breeding, socio-economics and natural resource management, while ICRISAT has comparative advantage in the areas of crop improvement, cropping systems, farmer participatory research and

modeling. The participating national institutions while contributing to both agronomic and feeding trials, facilitated contact with and collaboration with farmers. The main contributions from the IFDC, were in the area of integrated nutrient management as well as related fertilizer input and access issues. CORD provided expertise in socio-economic studies, and resource management at the community level. Finally, ILRI provided leadership in all aspects related to livestock feed development and utilization including livestock mediated nutrient cycling.

Outputs. It is rather too early to build a story around outputs, as the project is just starting to implement the second year program of work. Nevertheless, participating farmers appear ready and willing to continue trying out and evaluating the packages, because they see some promise - they have harvested more grains and residues, their animals appear to have benefited from consuming the crop residues. Preliminary data suggest interesting rates of return and benefit-cost ratios, and there is a promise of the development of new tools and methods in the area of monitoring and impact assessment. These notwithstanding, some more time would be required to fully evaluate the package(s) on the basis of tangible and quantifiable outputs. On the whole, this project is well on its way to being a good quality exercise.

2 SLP projects in LAC, with particular emphasis on Central America

SLP supports three projects in LAC: (1) Improving legume-based feeding for smallholder dual-purpose cattle production in tropical LAC; (2) Enhancing livestock productivity while protecting mountain ecosystems, and (3) SLP as a virtual network (vNetwork) and virtual laboratory (vLabs). These projects were implemented in 1998, 2000 and 2001, respectively, and the analysis that follows emphasizes activities carried out by the first and oldest of these projects in Costa Rica, but also includes brief comments on the second project.

Farmers and scientists involved in the SLP project in Costa Rica agree in their appreciation of project management, performance and outputs. These views are shared by the Panel.

The project has successfully tested and integrated a reasonably wide portfolio of germplasm and germplasm management alternatives in smallholder dairy systems. Furthermore, farmers proactively contributed ideas regarding the role of the above components and implemented them in their production systems.

Examples of the germplasm work include: newly bred grasses such as *B. brizantha* cv. Toledo recently released in Central America and Mexico, as well as other selected materials such as *B. brizantha* cv. La Libertad and cv. Marandú and newly released herbaceous legumes such as *A. pinto* cv. Porvenir, selected in field testing in Costa Rica, *S. guianensis* cv. Pucallpa in Perú and *C. macrocarpum*, useful in a variety of environments. Also, a new shrub legume, *Cratylia argentea*, will soon be released in Costa Rica as cv. Veraniega, as a direct consequence of on farm testing by the SLP.

Examples of management practices include: Conservation of *Cratylia argentea* as silage, in mixtures with elephant grass and sugarcane, a practice first developed and tested by two

farmers later further refined by scientists of Costa Rica National University and the Escuela Centroamericana de Ganadería, ECAG, in formal experiments.

Farmers chose to ensile the legume in two different ways:

- in relatively small above-ground superficial silos, covered with plastic sheets: the material was chopped in small stationary choppers commonly used to chop elephant grass and sugarcane in cut-and-carry systems, and mixed by hand with the respective grasses;
- in small recycled plastic bags, containing probably 10-15 kg each and pressed by hand following chopping as above.

It is clear from the field visits, and further confirmed by farmers' reports that these cut-and-carry and conservation techniques have significantly decreased costs of production during the dry season (>4 months) by eliminating in some cases and reducing in others, the need for purchased concentrates. These improvements still have to be formally incorporated in ex post analyses, but are widely recognized by farmers. It is interesting to note, as an aside, that at least one of the dairy cooperatives does not support the use of *Cratylia* because it is seen as competing directly with the concentrates that they prepare and sell to their associates. The chore of cutting, carrying and chopping *Cratylia* is not considered as an additional burden by farmers, since it is already widely practiced with sugarcane and elephant grass. It should be noted that in Central American countries other than Costa Rica, these practices would use labor with little or no opportunity costs (e.g., Nicaragua has up to 60% rural unemployment). Also according to farmers, some of these new materials have allowed the continued production of milk throughout the dry season, even with positive effects on calf weight gains. These trends are adequately documented by on-farm monitoring, and further supported by controlled on-station experiments at ECAG. At least one farmer interviewed claimed that cows thus supplemented re-conceived earlier with the possibly undesirable effect of a narrower concentration of calvings, to the eventual detriment of a more uniform production of milk year-round.

Positive effects in stabilizing and increasing a steady stream of cash income are also mentioned by farmers and are confirmed by bioeconomic analyses carried out by the project staff in at least one of the farms visited, the combination of improved quantity and quality of cut-and-carry forages, improved grasses and grass-legume mixtures, and silage allowed the removal of some very steep paddocks from the grazing rotation, The area thus freed was reforested to form a "wildlife corridor", that also preserves a natural water source. According to the farmer, there has been a rapid return of wildlife to the reforested area but this effect remains undocumented by the project. Interestingly, the release of part of the farm for purposes other than cattle raising coincides with bioeconomic modelling work conducted at CIAT. Similarly, at least one farmer indicated that water runoff has visibly decreased under the new forages (both herbaceous and shrubs). This is supported by the visible accumulation of a large amount of litter on the soil surface of paddocks located on very steep slopes, but this effect and other environmental impacts of the new feeding strategies need to be adequately documented.

Another dimension that surfaced during visits to farms in Costa Rica is that the current taxes on milk imports (“aranceles”) are due to come down rapidly (Costa Rica is due to reduce them to 10% by 2005). Smallholders, cooperatives and processing plants are keenly aware of the need to reduce feeding costs by, among other things, reducing the purchase of concentrates, but at the same time there is a deeply felt need that the country needs to maintain the “green” reputation that it currently enjoys. In that context, the SLP and Tropileche appear to be making a significant contribution.

Scientists involved in both projects expressed a number of additional comments regarding the implementation of the SLP and its consequences. Management and scientists of both IARCs, and staff of NARIs in Costa Rica complained about the false start of the SLP and the unfulfilled expectation that financial resources would be available in significant quantities at the start of the project. This eventually led to the withdrawal of the official representative of the National University of Costa Rica, later substituted with the voluntary, unofficial, ingress of another university professor. Other than that, scientists are very positive regarding the approach and subsequent management of the SLP: CIAT’s and CIP’s Management agree that coordination has been good during the past four years, and allocation of monies has generally been fair.

They also coincided in strongly supporting inter-center cooperation, and consider that SLP sets a good example for systemwide programs. It is also obvious that both IARCs have internalized the approach and are committed to support it. CIP’s commitment is particularly noticeable via the allocation of considerable resources (not only for senior staff, but also for support staff and numerous grants and scholarships for students involved in various parts of the respective projects). Both institutes are satisfied with the current functioning of the LPG but referred to the earlier stages, in which projects were submitted to external reviews, as overly expensive.

With regards to the contribution of both IARCs, at least two key generalizations can be made:

1. Both IARCs have “capitalized” (in the words of CIP’s management and scientists) on previous, long-term research investments. A varied (and variable between Centers) portfolio of technologies and components is coming into fruition under the umbrella of the SLP, with a larger and more incisive farming systems perspective, and demand-driven approach than in the past.
2. Integration of previous efforts and activities differ among both Centers: in CIAT’s case it very clearly focuses on integration of forage germplasm, forage management, various on-station and on-farm methodologies, and ex-ante bioeconomic evaluations, with a modest component of NRM (in the case of Costa Rica, mostly contributed by the NARI). On the other hand, CIP’s approach appears to be more holistic, possibly because the SLP activities are very closely integrated with the respective ecoregional program.

The above observation is possibly a valid reflection of the nature of the involvement of the respective Centers in the livestock sector, with CIAT having had a long-term commitment to

forage germplasm improvement, and CIP having a relatively more recent interest in the analysis of farming systems in which roots and tubers, and livestock intermingle.

CIAT's Management insisted on the need for Tropileche and the SLP to more closely interact with other systemwide programs, and specifically the Soil, Water and Nutrient Management Program. On the other hand, and in fairness to Tropileche, the documentation of the activities carried out to document production-environment tradeoffs and interactions is only now beginning to surface after three years of on-farm activities. Nevertheless, there is a real opportunity for close cooperation between these two systemwide programs.

A successful inter-center program depends very much on the expertise and component technologies developed by the respective centers. In this context, the continuing development of forage components for feed resources, other than new *Brachiaria* accessions and hybrids originating from CIAT, has decreased during the past few years, judging from the amount of germplasm material currently available in Costa Rica. Given the long genesis required for the development of new perennial forage alternatives, this is a matter of concern should the SLP, or a similar global program, not extend into the future since a broader range of alternatives is still demanded by the farmers visited in Costa Rica. On the other hand, CIAT is now promoting in Central America the evaluation of core collections of cowpeas from IITA as green manures and of sorghum and pearl millet lines developed by ICRISAT for acids soils as feed resources for dry-season feeding.

It can be inferred from field and office visits that ILRI still has limited visibility in LAC and thus is bound to receive equally limited credit. Nevertheless, when the issue was discussed with NARI representatives in Costa Rica, they expressed their concern in regards to the relative benefits derived from financing expensive IARC scientists vis-à-vis the use of those funds by NARIs for purely operational purposes. Thus, any changes envisaged in the current situation should pay careful attention to the opportunity costs of placing additional international scientists vis-à-vis the availability of trained scientists in NARIs.

CIP's Management strongly believes that the SLP has made important tangible and intangible contributions, and in particular, that it has increased awareness of the importance of livestock within extant farming systems. CONDESAN is CIP's implementation of its ecoregional program. In that context, it is obvious from the above discussion that integration with a systemwide program such as the SLP is working well. CIAT's ecoregional program is implemented through a variety of bodies and projects, but Tropileche can validly be identified as one of them.

With regards to transaction costs, neither IARC seems concerned and there is agreement that, although initially they may seem somewhat high, they were essential to build both institutional and personal bridges. In this context, there is little doubt that interpersonal linkages are the foundation of good cooperation and the argument has been put forward that, since institutions are made by people, it should not be surprising that interpersonal connections are essential to good inter-institutional cooperation.

Lastly, there appears to be real grounds for closer cooperation between the CIP-led CONDESAN and CIAT's activities in medium-altitude areas, such as those in which Tropileche is active in Central America. In some regions within LAC, the high Andes and the medium-altitude hillsides form a continuum, such that it makes sense to develop scenarios and examine tradeoffs among the interactions of both ecosystems.

IARC-NARI partnerships: Given brief visits it is difficult to judge in-depth how well these work on a daily basis, but in neither case does there appear to be a need for concern.

The Panel reviewer met in the office and in the field with a variety of NARI members in Costa Rica, and it is clear that the Tropileche consortium is working well. The allocation of responsibilities and resources has been worked out and there exists consensus regarding the role of each institution. Integration among them appears to be excellent.

In the case of CONDESAN, it can be inferred that integration and division of labor has also been worked out satisfactorily, at least judging from the amount and diversity of institutions involved in the consortium and their commitment. CIP provides significant support via ample office space, well equipped and up-to-date computing equipment, and senior staff involvement and support. The presence of numerous postgraduate students carrying out their thesis work is noticeable and must surely contribute to the development of goodwill by their respective institutions and the generation of quality research outputs.

In both cases there is concern about the continuity of the efforts undertaken under the umbrella of the SLP if new funds are not forthcoming. This concern was very forcefully and insistently expressed by various representatives of the Costa Rica NARI who rightfully consider that they need three additional years of on-farm work to quantify impact and to achieve a significant degree of adoption. They also rightfully claim that the on-farm experience accumulated thus far is relevant to the rest of the Pacific coast of Central America (extending north of Costa Rica to Nicaragua, Honduras, El Salvador and into parts of southern Mexico). In the view of the Panel this offers a good opportunity for horizontal cooperation across the region, which would be an added positive output of SLP.

The CONDESAN consortium is accumulating a significant amount of expertise in bioeconomic modelling and in the development of alternative scenarios. This is a felt need by the NARI in Costa Rica, and there seems to exist considerable room for expanded cooperation between both consortia and the respective IARCs. In these activities there is an opportunity for a wider involvement of ILRI and IFPRI, in the areas of policy research and modelling.

Value added by SLP can be summarized in tabular form as follows.

Consortium	Added value
CONDESAN	* Regional analysis
	* Modelling, incorporating and systematizing existing knowledge
CIP's ecoregional	* Shared knowledge and methods

Consortium	Added value
Program	* Analysis of livestock roles in the high Andes ecosystem, across countries
	* Increased cooperation between NARIs: building bridges and goodwill
	* Livestock-agriculture-environment tradeoffs and interactions
	* Service function to SLP via vLabs
	* Increased inter-institutional and inter-country cooperation

Consortium	Added value
TROIPECHE One of CIAT's Regional consortia	* Extrapolation of forage germplasm ranges of adaptation and utilization for selected sp.
	* Contribution to regional analysis of forage- and pasture-based smallholder dairy systems
	* Generalization of methods to compare feeding strategies in smallholder dairy systems
	* Increased cooperation between NARIs involved in dairy systems R&D
	* Increased linkages: dairy systems-seed sector-agribusiness
	* Interactions and tradeoffs between environment and grazed systems
	* Opportunity for horizontal cooperation across much of the subhumid Pacific coast of Central America

3. Utilization of forage legume diversity for dairy production and natural resource management in East and Central African highlands

ICRAF-KARI-ILRI: A very significant part of the on-farm work is conducted by the national institute, KARI, which has allocated considerable human resources to the project. Furthermore, they appear knowledgeable and committed, and maintain good working relations with a large number of smallholders.

Also, integration between ICRAF and KARI appears to work well, and the division of responsibilities and labor has been worked out well.

The on-farm activities contemplated in the project, which involve the introduction of multipurpose shrubs and trees, are long term in nature. KARI's staff is therefore anxious to

secure funds that will allow these activities to document appropriately the impact of the interventions that have been experimented with in the program.

It is clear that the on-farm work is beginning to raise a number of issues that require further controlled, on-station experimentation. An example of this type of issue is the possibility that supplementation with some of the introduced shrubs may have negative consequences on the reproductive performance of ruminant livestock. It is uncertain that KARI has access to the required facilities and laboratory expertise. In this case, ILRI's Livestock Feeds and Nutrition Project should be in a position to backstop the above activities with strategic research and/or links to appropriate advanced institutions. Furthermore, it would be advisable that ILRI staff is involved in the identification of testable hypotheses and proper design for on-station controlled experiments.

Although not explored in depth, both ICRAF and ILRI should examine how best to assure that environmental impacts of the technologies under test are adequately documented.

4. South and West Asia and North Africa

The SLP work in this broad region covers diverse activities, from frontier molecular biology in Patancheru, to on-farm in-village demonstration plots of unconventional fodder species in Syria, Morocco and elsewhere in North Africa. This diverse work is exciting in several respects, not least for the apparent opportunity for helping to lift many poor people out of poverty. The White Revolution may be happening in India and elsewhere, but in the dry areas it will be an income-differential increaser unless the productivity of the drier areas can be lifted to boost the livestock earnings possibilities of the remote rural poor.

The work at ICRISAT HQ, and its links to several national programs, are surely going to be of great value in the South Asia region, with its growing emphasis on livestock products as incomes slowly rise, especially in the more marginal areas missed by the Green Revolution, and as the importance of animal products in human diets becomes better appreciated. Under the population pressures and their inevitable effects on land-use intensity, the problems of getting sufficient feed and forage to ruminants and other animals on which so many depend are increasingly recognized at all levels, including by scientists working on dual-purpose crops, such as all the major cereals, and especially the cereals of greatest significance in drier areas, such as millets and sorghum. The work at ICRISAT supported by SLP and related programs has deep roots in collaborative work with ILRI. It involves both conventional breeding, as well as modern molecular approaches that will assist and speed such work. Thus the gains through development of cultivars with both higher and less risky grain yields as well as better forage characteristics of stover and plucked leaves should be relatively early, compared with typical crop-improvement programs. ICRISAT has packaged several of its related thrusts into an imaginative and well supported program of "From Food to Feed and Fodder", which should prove to be one of high impact in the short run.

At ICARDA and its national partners, several approaches are being pursued that should bring benefit to diverse parts of this large mandate area. Some of this work has important ecological dimensions, such as fostering better land cover in the degraded steppe areas of Syria

and other parts of West Asia, and of drier areas to the north and west of the Sahara. There are elements of research *and* development in the pursuit of more easily established and robust browse species, such as *Atriplex*, both in the steppe proper, as well as an inter-crop with the traditional barley crops. One of ICARDA's key study areas, the Khanasser Valley Integrated Research Site, is also one of strong poverty-reduction as well as environmental focus. Elsewhere in the harsher environment of the dry areas of Morocco and Tunisia, other species such as *Opuntia* are showing promise, both as fodder sources, and robust vegetation that can reduce soil erosion and environmental degradation. Low-cost technologies for establishing range species are being developed and tested in collaboration with development projects. ICARDA and the Badia Project in Syria (a development project funded by IFAD) are jointly sponsoring local manufacture of a new version of an Australian pitting machine adapted to Syrian soil and species. In all such areas, there will never be a Green Revolution of the conventional type, but the near-deserts will look greener with the new vegetation and be more stable, and incomes will rise because livestock are better fed and more productive than will otherwise be the case without SLP and its national counterpart operations.

Although the Panel field visits were confined to South and West Asia, it can be noted that ICARDA and ILRI are preparing to work with NARSs from Armenia, Azerbaijan, and Georgia to support efforts to restore adequate feed production in the Caucasian countries. The transition to less-centralized economies has had a dramatic impact on the livestock sector of the Caucasian countries. Lack of feedstuffs to meet the nutritional demands of livestock is now one of the major problems. There has also been a serious decline and intermingling of breeds as most of breeding schemes and programs were dismantled. Thus research on feed resources and breed characterization has important implications in the revitalization of the livestock sector and guiding policy formulations. Detailed surveys and documentation of feeding practices at the farm level are to be undertaken in each country, with different production scenarios ranging from individuals to farm associations, and from subsistence to commercial levels of operation. Also important are the efforts being made to document the various commodity-oriented feed technologies and their applicability in the changing production circumstances. An effort aiming at improving the understanding of regional ruminant animal genetic resources has also been launched. As noted in section 6.2 of the main report, just where one draws the line between the ILRI core business, the role of ICARDA as a regional convenor, and the synergistic role of SLP is a matter of non-trivial judgment that the Panel was not convinced had been adequately addressed.

APPENDIX 7 (A) - CONCEPT NOTE**Research Proposal for SLP Funding****PROJECT TITLE:****LEAD CENTER(S):****PRINCIPAL INVESTIGATORS AND CONTACT DETAILS:****COLLABORATORS AND CONTACT DETAILS:****TOTAL COST OF PROJECT:****START DATE AND DURATION OF PROJECT:****DATE OF SUBMISSION OF CONCEPT NOTE:****LOCATIONS OF PROJECT:****BACKGROUND** (Max.300 words)**PROJECT PURPOSE:** (Max. 200 words)

- a) State project purpose simply and directly
- b) State why the SLP is the appropriate funding mechanism
- c) State what inter-center synergies are expected from SLP participation in the project

WILL THE PROJECT CONTRIBUTE TO CGIAR GOALS IN:

- | | |
|-----------------------------------|--------|
| a) Germplasm enhancement | Yes/No |
| b) Natural resources management | Yes/No |
| c) Policy analysis | Yes/No |
| d) NARS institutional development | Yes/No |

OUTPUTS (Max. 300 words)**DEFINE CONTRIBUTION OF OUTPUTS TO:** (Max. 200 Words)

- a) Poverty alleviation
- b) Food security
- c) Environmental protection or enhancement

RESEARCH ACTIVITIES IN RELATION TO OUTPUTS (Max. 300 words)**IMPACT AND BENEFICIARIES:** (Max. 150 words)

- a) State, preferably in quantified terms, what development impact might be achieved in the short or medium term and who are the beneficiaries.
- b) State, what indicators will be used to demonstrate impact

- c) State, what activities will be undertaken during the project's life to prove impact either ex-ante or ex-post.

DISSEMINATION AND UPTAKE PATHWAYS: (Max. 150 words)

- a) Indicate what channels will be employed to technology uptake
- b) Indicate what methods will be used to upscale the findings
- c) Suggest what might be the dimensions of the eventual recommendation domain

RISKS AND ASSUMPTIONS ASSOCIATED WITH OUTPUT ACHIEVEMENT (Max. 200 words):

FINANCIAL SUMMARY:

Please breakdown costs by:

- a) SLP funding requests ,
- b) Organisational contributions (in kind or in cash)
- c) Allied special project funding contributions and
- d) CGIAR financial years into the following cost line items:-

Employment

Capital equipment

Consumables

Travel

Training

Dissemination

Overheads

OUTLINE THE SPECIFIC CAPABILITIES OF THE CONSORTIA AND KEY STAFF TO ACHIEVE THE PROJECT PURPOSE AND PREVIOUS EXPERIENCE IN PROJECT MANAGEMENT (Max.300 words)

References

APPENDIX 7 (B) - PROJECT ASSESSMENT SHEET**SYSTEMWIDE LIVESTOCK PROGRAMME****PROJECT TITLE:****SUBMITTED BY:**

CRITERION	SCORE 1-5	COMMENTS
1. Scientific Quality <ul style="list-style-type: none"> • Definition of problem • Appropriate methods • Feasibility of research 		
2. Conformity with priorities <ul style="list-style-type: none"> • CGIAR • SLP 		
3. Relevance <ul style="list-style-type: none"> • Importance (Sci. & Econ.) • Extension of recomm. Domain 		
4. Potential for impact <ul style="list-style-type: none"> • Ecoregional • Transregional 		
5. Budget <ul style="list-style-type: none"> • Appropriate to task • Matching funds 		
6. Partnerships <ul style="list-style-type: none"> • CGIAR • Consortia 		
7. Financing Strategy <ul style="list-style-type: none"> • Donor identified 		

APPROVED

REVISIONS
NECESSARY

DISAPPROVED

APPENDIX 8 - SLP PUBLICATIONS

PARTIAL LIST OF PUBLICATIONS

A. PROGRAMME PUBLICATIONS

CGIAR Systemwide livestock Programme: Biennial Report 1997-98. ILRI, Nairobi, Kenya.

CGIAR Systemwide Livestock Programme: Biennial Report 1999-2000, ILRI, Nairobi, Kenya.

Contribution of livestock to mountain development: Research and development issues, 2000. Editors: P.M. Tulachan, M.A. Mohamed Saleem, Fulani Maki-Hokkonen and Tej Partap.

Global agenda for livestock research: Proceeding of consultations 1995, Nairobi, Kenya (Consultations undertaken to prioritise ILRI & SLP research agendas).

Global agenda for livestock research: Proceeding of consultation for the South Asia Region, 1995, Patancheru, India (Consultation undertaken to prioritize ILRI & SLP research agendas).

Global agenda for livestock research: Proceeding of the consultation for the South-East Asia Region, 1995, Los Baños, Philippines (Consultation undertaken to prioritize ILRI & SLP research agendas).

Global agenda for livestock research: Proceeding of a conference on development of livestock research priorities in Asia, 1997, Hanoi, Vietnam (Consultations on ILRI & SLP research agendas).

Global agenda for livestock research: Proceedings of a consultation on setting livestock research priorities in West Asia and North Africa (WANA) Region, 1997, Aleppo, Syria (Consultation on ILRI and SLP research priorities).

Latin America and Caribbean: Livestock research priorities, summary report, 1995, San Jose, Costa Rica (Consultations on ILRI and SLP research agenda).

Programme plan and funding request for the Systemwide Livestock Programme: Feed resources production and utilization, 1995, ILRI, Nairobi, Kenya.

Programme Plan: Systemwide Livestock Programme: Feed resources, Natural resource management and related policies: 1999, ILRI, Nairobi, Kenya.

B. PROJECT PUBLICATIONS

A SET OF EX-ANTE IMPACT ASSESSMENT OF RESEARCH ON CROP RESIDUES IN MIXED FARMING SYSTEMS

In progress

P. Kristjanson, P. Thornton, S. Tarawali, A. Okike. *Genetically improving grain and fodder yields of cowpeas: measuring the potential impact of the research*. For ILRI Impact Assessment Series.

P. Kristjanson, I. Okike, S. Tarawali, B.B. Singh. Adoption and impact of improved dual-purpose cowpea on food, feed and livelihoods in the West African dry savannah zone. For *Agricultural Economics*.

Completed

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OTHER OUTPUTS

Impact at farm level

- The project helped 150 farmer groups, with a total of 2,600 households, to establish 250 *Calliandra calothyrsus* nurseries. It is estimated that over 3000 other farmers have planted fodder material through assistance of SLP groups and extension collaborators. In the short rains 1999, farmers transplanted about 400 seedlings each, of which only about 240 survived, due to the poor rainfall. Economic benefits per year beginning in 2001 from these plantings are projected to be USD 62.4 per household or a total of USD 162,240 per year. The net present value of this stream of benefits, which begins in year 2 and is discounted at 10% over a 15 year period, is \$1,196,000.
- In 1999, the project started disseminating another fodder tree species, mulberry (*Morus alba*) and desmodium intortum.
- Twenty five extension staff and 450 farmers were involved in self sponsored exchange tours.

GIS maps were produced by the ILRI MOSD GIS group (T de Wolff et al.) showing recommendation domains for two fodder species, *Calliandra calothyrsus* and *Desmodium intortum*. The maps incorporated both biophysical and socioeconomic data and are useful in guiding dissemination efforts as well as assessing the potential impact of wide-scale adoption. Copies are available on request and were reproduced in the SLP Biennial report for 1999-2000.