IDRC'S SUPPORT TO LIVESTOCK RESEARCH IN DEVELOPING COUNTRIES

Hugo Li Pun[1]

I. INTRODUCTION

Livestock play important roles in developing countries. Considerable proportion of the land and plant resources are used for the production of livestock. In economic terms the contribution of livestock to the agricultural gross domestic product of most developing countries is relatively high (over 30 %). This is an underestimate as it does not take into account the contribution of manure, nor the value of animal traction. Livestock are also important sources of valuable products such as high quality protein and fiber. For small farmers, peasants and even the landless, livestock serve as a way of capitalization (being easily saleable and providing liquidity). It utilizes products of low opportunity cost: marginal lands/grasslands, agricultural by-products and labour (women, children, the aged). Animals are also important in food security as they are buffers against economic and climatic instability such as in cases of: droughts, floods, frost, high inflation, devaluation, and inefficient financial systems.

There are high needs for animal products in developing countries as expressed by present consumption and nutrition levels. Demand for animal products in developing countries is high due to their income elasticity and the tendency for income growth (Mellor, 1989). Pastures and animals contribute also extensively to nutrient recycling (Sanchez and Ara, 1991). For all the above reasons, animals are very important for the sustainability of agricultural systems.

In contrast, livestock in developed countries play a diminishing role and may even have some negative connotations (Durning and Brough, 1991) due to:

a) Over consumption of animal products, food in general and a growing concern about the effects of high cholesterol in the diet.

b) Diminishing role of agriculture in natural resource and labour use, and in the economy in general.

c) Pollution of the environment as a result of highly intensive agricultural systems (pesticides, fertilizers, manure).

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[1] Divison of Environment and Natural Resources. International Development Research Centre. Montevideo, Uruguay.
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d) Animal rights are becoming a growing concern.

e) Perceptions that in developing countries animals contribute to destruction of the tropical rain forests as some countries have promoted policies that have encouraged the use of forests for extensive beef ranching.

f) The perception that most animals in developing countries are in the hands of ranchers and rich farmers.

g) The competition for cereals between animals and people in developing countries.

Changes in the donor environment with respect to the support to the agricultural sector are being perceived over the last years. They may be the result of a combination of factors, which may include the following:

a) Differences in perceptions regarding the role of agriculture in general, and livestock in particular, for developing countries.

b) Reflections from pressures from their constituencies.

c) A changing global environment (globalization of the economies, reunification of Europe) which could result in competition of funds with the support to agricultural R & D in developing countries.

d) Appearance of new issues in the research & development agenda: environment, gender and sustainability.

e) The relatively low impact of livestock R & D projects due to their complexity, cost and long-term nature, may be resulting in donor fatigue.

f) The need to define new roles for agriculture and agroindustries in which an increasing participation of the private sector is being encouraged, therefore reducing the typical support to public sector R & D.

On the other hand, agriculture in developing countries will face serious challenges, as per capita arable land will be decreasing while food demand will continue to grow. Among the major factors affecting the demand of food will be: population growth, urbanization, and income growth (CGIAR, 1991). They will result in higher demands for high-value cereals, animal products, vegetables, fish, and processed foods. Within this context, national institutions in general, have not expressed clear views nor have yet reacted to changes in terms of structures or programs.

IDRC is an organization supported by the Canadian government to assist developing countries in creating their own long-term solutions to pressing development problems. Support is given

directly to Third World institutions whose research focuses primarily on meeting the basic needs of the population and overcoming the problems of poverty. The institution is autonomous in its policies and activities. Its Board of Governors is international and reflects the nonpartisan, multicultural character of the organization. Through the years, IDRC has been very active in the support of Agricultural research, particularly in the area of farming systems and animal production systems. As a result of the changing environment, the Centre recently has reorganized its programs as to better respond to the challenges of promoting sustainable development.

The purpose of this paper is to describe IDRC's support to livestock research over the past two decades, and present new trends in the Centre support to livestock research within the context of natural resource management.

II. PAST SUPPORT TO LIVESTOCK RESEARCH

Since its creation two decades ago, IDRC chose to support research aimed at improving the situation of small farmers in developing countries, given their needs, the fact that they are the majority of the rural population, and had been neglected from many research and development efforts.

1. Thematic coverage.
During the first five years, support was given mainly to component research in the areas of animal health (Trypanosomiasis), and animal feeding (pastures and agricultural by-products). The first experiences in the support to research for small farmers were developed in cropping systems and rural development in Asia (IRRI) and Latin America (CATIE, Caqueza in Colombia) in the early 70s. Animal production systems research projects were initiated in the mid to late 70s in Latin America (CATIE in Central America, IDIAP in Panama and IVITA in Peru). Those projects pursued holistic, participatory approaches combining biological sciences (nutrition, animal management and health, pasture agronomy and management, soil sciences and agronomy), and social sciences (agricultural economics, mainly). During the 80s a strong emphasis was given to systems research, starting in Latin America, but followed in Africa and Asia. This resulted in more than half of the funds being allocated to systems research (Figures 1 and 2).

Mixed systems (crop-animal; crop-animal-trees) research was started in the mid 80s, mainly in Latin America and Asia, given the relatively higher institutional capacity for systems and multidisciplinary research in those regions. With this came the incorporation of other disciplines to the technical teams, such as rural sociology and anthropology to address social issues in the characterization of systems, design of alternatives, technology adoption and training. Gender analysis was also started in the last 5 years.

The need to: develop and promote methodology for research, exchange experiences, and promote training and technical back-up led to the support of research networks. The Centre was particularly active in supporting a number of them including animal production systems and pastures networks in Latin America, animal production and mixed systems networks in Asia, and feeding systems networks in Africa. A list of them and their main characteristics is provided in Table 1.

2. Geographical coverage.
Although there are commonalities in ecological conditions across regions, the Centre has recognized the need to have regionally differentiated programs according to specific characteristics of production systems, people's needs and aspirations, government plans, relative institutional capacity, activities of international programs, etc. For example, given land constraints in Asia, and the prevalence of mixed farms (crop-animal), and consumption patterns, the Centre has supported research in mixed systems, and small ruminants (in intensive systems or integrated in plantations to maximize the utilization of the undergrowth, reduce the use of herbicides and fertilizers).

In Africa, given the importance of pastoral systems in the semi-arid zones and the need to intensify land use in the more favorable areas of Eastern Africa, the Centre has chosen to concentrate efforts to address the improvement of those systems.

In Latin America, considering that land is not a serious constraint in the tropical areas, efforts have been made towards the improvement of grazing-based dual purpose production systems. In the more unfavourable areas such as the Highlands of the Andean region, the emphasis has been on the improvement of mixed systems. Due to the fragility of the ecosystems in the humid tropics, the Centre has been supporting agroforestry and agrosilvipastoral systems research. Traditionally a larger emphasis has been allocated to Latin America given its relatively higher institutional capacity to conduct long-term pioneering research in complex topics, such as systems research. As experiences have evolved a more balanced support across regions has been achieved (Figure 3).

3. Species.
Within the characteristics of the different farming systems, a strong emphasis has been given to the improvement of ruminant production systems, due to their ability to utilize low quality forage and by-products and convert them into high quality products. The emphasis in beef cattle of the 70s (reflecting the strong program in Latin America), was shifted to dual-purpose cattle and small ruminants in the 80s (reflecting the emphasis in small-holder production, changes in the socio-economic environment, and the better understanding of prevalent farming systems).

Also in the last years the preoccupations for gender issues, the development of neglected species, and the need to generate income for less endowed farmers and homesteads, originated the support to minor species (guinea pigs, native swine, South American Camelids, bees). The evolution of support is shown in Figure 4.

Results from these efforts have been documented recently in several publications (Li Pun, Sere and Devendra, 1991; Li Pun, Estrada and Sere, 1991; Li Pun and Paladines, 1992; Vargas et al, 1991; Nittis et al, 1991; Riesco, 1990; Romero and Holman, 1991). They include introduction of improved grasses and legumes, better nutrition and feeding, animal health practices, improved management, better soil management, revolving seed funds, and others. They have resulted in better animal performance and increased income for participating farmers. Technologies developed have been adopted in many cases. The linkages between changes in the macroeconomic policies and farmers responses have been studied in projects in Guatemala and Costa Rica (Vargas et al, 1991; Romero and Holmann, 1991, respectively). Important lessons have been derived from the support to networks which have been used to design newer initiatives (Li Pun and Paladines, 1992).

III. NEW IDRC ORGANIZATION

In order to better address the challenges of sustainable development the Centre recently reorganized its Divisions and Programs. The former Division of Agriculture, Foods and Nutritional Sciences (AFNS) has been reorganized into the Environment and Natural Resources Division (ENR). This represents a fundamental change to promote more holistic approaches in the use and management of the natural resources and incorporate strong environment and sustainability considerations in the research the Centre supports. In doing so the Centre aims at promoting interdisciplinary research and developing projects which involve environmental topics, economic management, social policy and information systems needed for decision-making (IDRC An Agenda 21 Organization, 1992). It shifts from supporting agricultural research in a narrow focus, into a broader perspective that considers not only the production aspects, but also the transformation, marketing and utilization and their impact on the environment. Policy-related outputs are an objective, given the pressing needs to promote greater impact. Two main Programs are emphasized:

- Sustainable Production Systems.

- Technology and Environment.

A series of Agriculture-related global initiatives have been organized to address priority topics where the Centre will concentrate its resources. They include the following themes: Low Input Sustainable Agriculture, Production to Consumption Systems

Research, Community-level Biodiversity Conservation, Threatened Ecosystems, Small Enterprise Development, and Food Security without Resource Degradation, among others. Within these topics and context, animal research activities may be supported, when appropriate.

Regional initiatives related to those global ones have also been proposed.

IV. TRENDS FOR FUTURE SUPPORT

A Global workshop on Animal Production Systems research was organized by the Centre in september of 1991 in San Jose, Costa Rica. A selected group of researchers from national and international organizations and donors were invited to review the state of the art in systems research as well as to discuss perspectives. The positive and negative experiences were discussed. A trend for the decrease in the support to agricultural research in general, and livestock in particular was perceived. The meeting recommended the formation of a task force made by IDRC, Winrock International and Inforum (The Center for Sustainable Agriculture) to explore widely the perceptions from researchers and decision-makers in both developed and developing countries, and donors regarding the role and priorities for livestock research and development in relation to the utilization of natural resources and the environment. A series of activities are being organized. They include a survey involving more than 70 of the stakeholders in North America, Europe, Africa, Latin America and Asia. The survey was conducted between June and September of 1992. Results will be discussed in an electronic conference which will take place between November and December of 1992. Different issues and opinions have been organized around three main topics: animals and the environment, role of animals in socio-economic development, and donors perspectives on past and future support. A publication of results from the electronic conference is expected. It could serve to guide future endeavors in livestock R & D given the wide coverage of the discussion, involving different sectors and disciplines, and avoiding sectoral biases.

Notwithstanding the results of that conference which may result useful also for IDRC, the following are some of the trends perceived for future projects:

1. No preconceived resource allocation will be given to livestock research globally or regionally. Its support will be as part of other major initiatives.

2. Livestock may be supported as an activity within the pursual of more integrative activities such as ecoregional approaches, where systems analyses show that they are important and a key entry point to improve a given system or for the development of sustainable production systems. For example, agroforestry

systems without livestock activities do not make much sense in many cases if pastures and animals are not included to use the foliage, contribute to nutrient recycling and produce useful outputs for farmers over time.

3. There are cases where specialized livestock systems are the key to promote the rational use of resources. In those cases, a whole-commodity systems approach will be used to analyze bottlenecks and key entry points from the production to utilization chain. Based on those results projects to develop alternatives may be designed. These may be the cases where the support to dual-purpose production systems research in the tropics or the alpaca production systems in the Highlands may be justified.

4. Projects on livestock may be supported when longer term global benefits for society at large are considered. That may be the case of the contribution of animals to global food security and the appropriate use of species (domestic animals, wildlife and pastures) so as to preserve biodiversity.

5. Projects on biotechnology may also be supported in topics of direct relevance to developing countries.

6. Some of the general characteristics that would be looked for in future projects may include the following:

a) Systems approaches: holistic, interdisciplinary and participatory research. Although this is not new, an evolutionary approach will be used based on experiences from previous projects and the participation of key disciplines and other actors that facilitate the development of sustainable systems. For example, participants would not be only farmers, but merchants, processors, exporters and/or representatives from the local governments who could be approached to discuss problems and articulate possible solutions. System analysis and development will be supported beyond the farm boundaries as to include off-farm related activities which could possibly affect or create greater impact on farm processes.

b) Multiinstitutional projects. It is realized that most national, international institutions and NGOs do not encompass all the needed combination of "hard and soft" sciences needed for holistic research. An alternative is to look for the adequate complementarity of disciplines and strengths between different organizations.

c) Search for policy-related outputs. Research on technology aspects often have neglected the understanding of the general socio-economic and environmental framework. On the other hand, socio-economic policies often have been formulated without considering technological knowledge generated at the micro

level and that considers what is best for beneficiaries and the environment. Future efforts to be supported will look for means to improve this articulation.

d) Representativity. Given restricted Centre resources, support to research will go mostly to cases where experiences could be extrapolated to major ecosystems, or could have regional or global impact.

e) Larger more tightly focused projects may be supported as to address key issues.

f) Collaboration with other donors. Activities will be identified where impact could be achieved from the concerted effort with other partners to go from research to development.

g) Institutionalizing new issues and approaches. Successful experiences will be used to stimulate their adoption by researchers, development workers and their institutions.

g) Networking. Lessons from past networks supported by the Centre will be used in the support of new ones. Issues and new approaches will be stimulated through the existing networks when appropriate. Mechanisms will be supported to stimulate entrepreneurial approaches, participation, sharing of costs, benefits and responsibilities, using electronic media to encourage more interaction and broader participation, access to information and reduction in the costs of meetings.

h) Canadian Community participation. Partnerships with the Canadian organizations will be looked for when appropriate to make available specialized expertise in Canada for the benefit of Third World countries.

i) Information systems. Support to information systems for decision-making will continue to be one of the key Centre actions. With the increasing relevance given to private sector participation in economic development, access to information by the private sector may be a key to promote sustainable development.

On-going political and economic trends in the world, pressing needs in developing countries, institutional changes, growing concerns for economic growth, equity and preservation of the environment certainly pose interesting challenges for future research on the apropriate management of natural resources. Within this context, reseearch and development on livestock should be supported not as an objective in itself, but as a utilizer of natural resources, and an enterprise to promote sustainable development in rural areas. Use of past experiences, creative approaches and ideas, and concerted efforts could be used to pursue relevant actions for a

better world. IDRC will continue to encourage and support Third World institutions in the conduction of applied research in pioneering areas. This could lead to joint ventures with other donors. Participation of the Canadian research community in those efforts may be very useful. International collaboration has an important role to play in sustainable development, but an even more important role is to be played by developing countries as actors and makers of their own destiny for this and future generations.

V. REFERENCES

CGIAR 1991. A Review of CGIAR Priorities'- Part 2. Essence Paper, FAO, Rome.

Durning, A.B. and H.B. Brough 1991. Taking Stock: Animal Farming and the Environment. Worldwatch Institute, Washington, D.C.

IDRC An Agenda 21 Organization. 1992. A backgrounder on current activities. International Development Research Centre, Ottawa, Canada. 37p.

Li Pun, H. and Paladines, O. 1992. El rol de las pasturas y la ganaderia en los sistemas de producción andina. Taller de Agroecosystemas Andinos, CIP, Lima, Perú. 7p.

Li Pun, H., Estrada, R.D., Sere, C. 1991. International Cooperation for the Development of Dairy Production in Developing Countries: The IDRC Strategy. Proceedings of the XXIII International Dairy Congress, October 8-12, 1990 Montreal. pp 208-227.

Li Pun, H., Sere, C. and Devendra, C. 1991. IDRC experiences in the support of Animal Production Systems research in developing countries. Paper presented at the Animal Production Systems Global Workshop, September 15-21, San Jose, Costa Rica.

Mellor, J.W. 1989. The Political and Economic Context for Development of Animal Agriculture in Developing Coutries. In: AID Summary Report of the Animal Agriculture Symposium: Development Priorities Towards the Year 2000, Washington, D.C. pp 7-20.

Nitis, I.M., Lana, K., Suarna, M., Sukanten, W. and Putra, S. 1991. Development of the Three Strata Forage System for Dryland Farming in Indonesia. Paper presented at the Animal Production Systems Global Workshop, September 15-21, San Jose, Costa Rica.

Riesco, A. 1990. Adoption of improved livestock production practices in the Peruvian Amazonia: an econometric analysis. PhD dissertation. Iowa State University, Ames, 205p.

Romero, F., and Holmann, F. 1991. Technology adoption and competitveness in small milk producting farms in Costa Rica: A case study. Paper presented at the Animal Production Systems Global Workshop. September 15-21, San Jose, Costa Rica.

Sanchez, P.A. and Ara, M.A. 1991. Contribución potencial de pasturas mejoradas a la sostenibilidad de ecosistemas de sabana y de bosque húmedo tropical. In: CIAT (Centro Internacional de Agricultura Tropical). Documento de trabajo No. 80. Contribución de las pasturas mejoradas a la producción animal en el trópico. Memorias de una reunión de trabajo realizada en Cali, Colombia, 9-10 de abril de 1989. Cali, Colombia. pp 1-23.

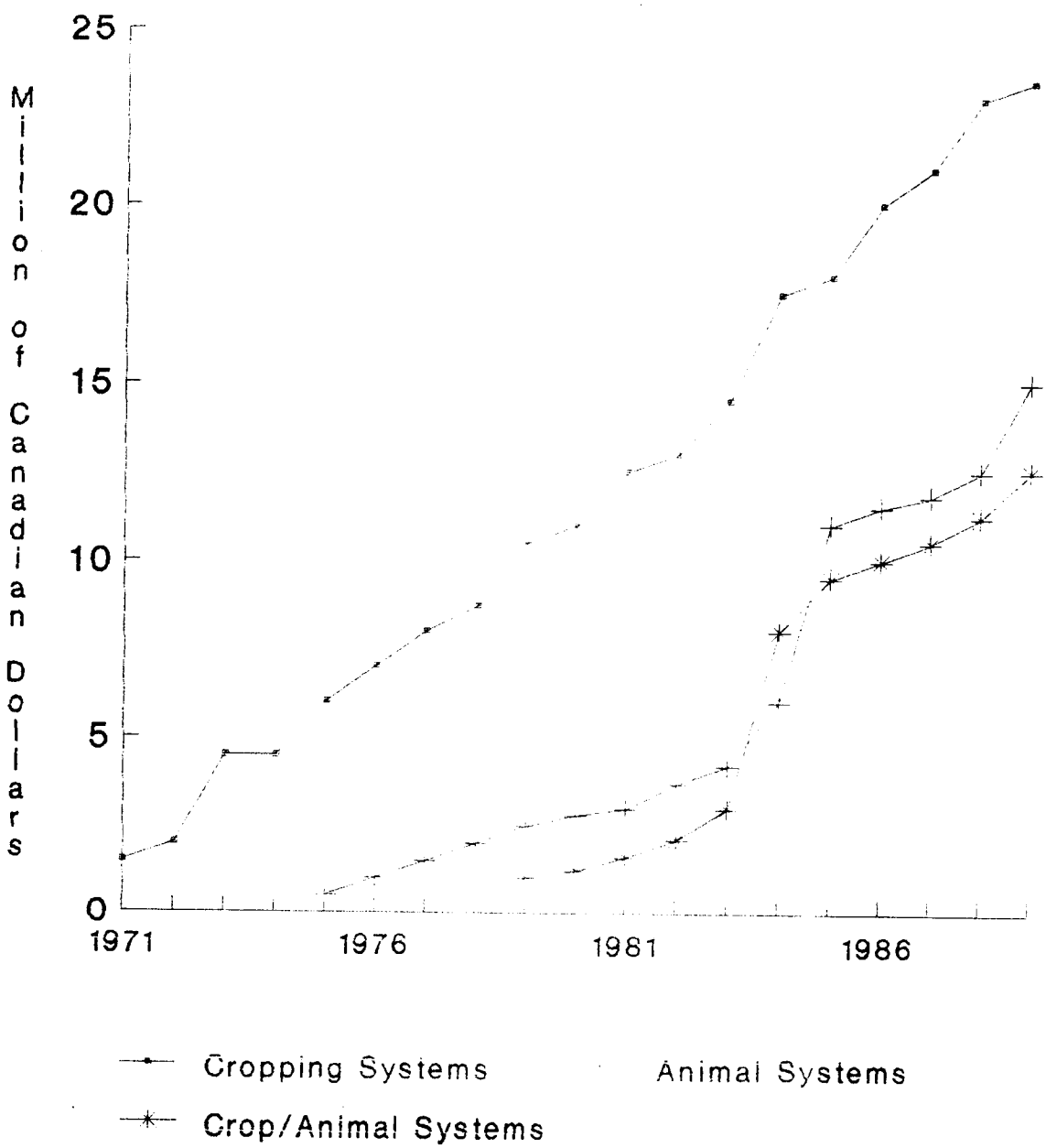
Vargas, H., Navas, E. and Estrada, R. 1991. Dual Purpose Bovine Production Systems in Guatemala. Paper presented at the Animal Production Systems Global Workshop, September 15-21, San Jose, Costa Rica.

Table 1. IDRC SPONSORED NETWORKS IN ANIMAL PRODUCTION SYSTEMS RESEARCH, 1991.

NETWORK	COUNTRIES	INSTITUTIONS	RESEARCHERS
A: SYSTEMS NETWORKS			
RISPAL (LA)	12	20	153
RIMISP (LA)	10	16	N/A
SRUPNA (Asia)	12	20	85
B: SYSTEMS RELATED NETWORKS			
RIEPT (LA)	18	51	104
ARNAB (Africa)	9	29	40
AFRNET(Africa)	10	23	25

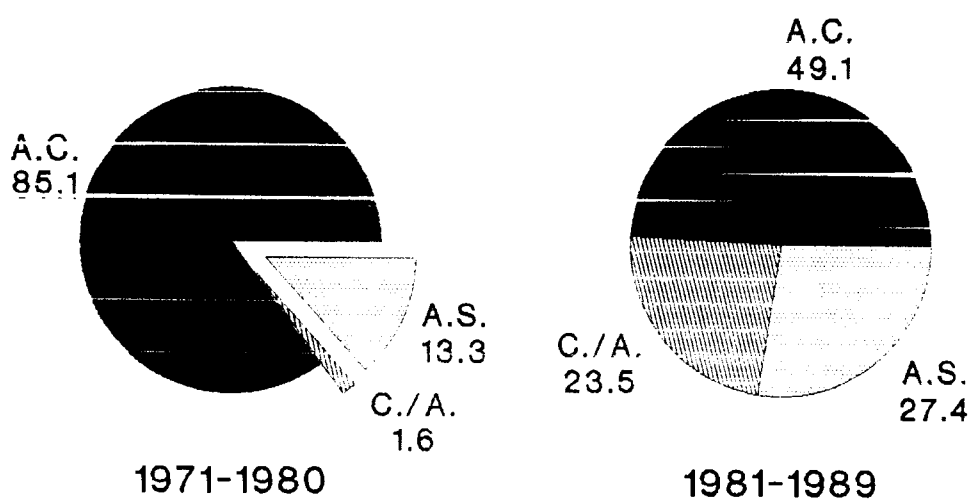
Source: IDRC files

Figure 1. FINANCIAL SUPPORT PROVIDED BY IDRC TO AGRICULTURAL SYSTEMS PROJECTS (ACCUMULATED)



Li Pun et al, 1991.

Figure 2. ALLOCATION OF IDRC'S FUNDS IN ANIMAL SCIENCES PROJECTS ACCORDING TO TYPE OF RESEARCH (%)



A.S.: Animal Systems

C./A.: Crop/Animal Systems

A.C.: Animal Components

Li Pun et al, 1991.