FINAL REPORT

SURVEY OF COMPLETED PROJECTS IN SOUTHERN AFRICA:

PUBLIC GOOD CASE-STUDY
AGRICULTURAL AND NATURAL RESOURCE MANAGEMENT PROJECTS

by RICHARD HASLER

CAPE TOWN, SOUTH AFRICA

28 October 1997
3rd Draft

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ACRONYMS

AGRITEX	Agricultural and Technical Extension Services, Zimbabwe
ARDA	Agricultural and Rural Development Authority, Zimbabwe
CASS	Centre for Applied Social Sciences, University of Zimbabwe
CAMPFIRE	Communal Areas Management Program for Indigenous Resources, Zimbabwe
ENDA	Environment and Development Activities, Zimbabwe
FAO	Food and Agricultural Organization of the United Nations
GMB	Grain Marketing Board, Zimbabwe
ICT	Information and Communication Technology
IDRC (ROSA)	International Development Research Centre, Regional Office for Southern Africa
ICRISAT	International Crop Research Institute
INIA	Institute Nacional de Investigacao Agronomica, Mozambique
PANESA	Pasture Network for East and Southern Africa
PCR	Project Completion Report
RENAMO	National Resistance Movement for Mozambique
SEMOC	Commercial Seed Company of Mozambique
UZ	University of Zimbabwe

1. *HIGHLIGHTS*

In this case study "Public Good" refers to a benefit for a broad group of people. It is usually associated with an improvement in the quality of life, but also refers to advances in knowledge and linkages between institutions which lead to an improvement in the quality of life. This case-study evaluation reviewed a set of projects exhibiting mixed impacts on public good amid mixed institutional contexts. The projects were:

1) The **Communal Cattle Management Project (Project No.: 86-0188)** was conducted by the Centre for Applied Social Sciences (CASS) at the University of Zimbabwe, Harare, Zimbabwe (1987-1993). This was a successful project as it was able to influence debates and outcomes, not only in Zimbabwe but also within the region through the generous output of publications (see appendices), through networking between government agencies and interested parties and through extensive involvement with local communal cattle grazing schemes.

2) The **Pasture Improvement Project (Project No.: 87-0022)** was run by the Grassland Research Station in the Department of Research and Specialist Services, Ministry of Agriculture, Harare, Zimbabwe (1987-1992). This project was crippled by bureaucratic inertia; funds only became available from the Government Treasury almost three years after the project was recommended. A key issue was also the lack of continuity in the intellectual leadership, and the 1991/92 drought which crippled the project extension. The project was a clear failure in terms of impact, output and reach.

3) The **Grain Storage Improvement Project (Project No.: 85-0286)** was run by the Environment and Development Activities (ENDA) Zimbabwe and the Department of Crop and Soil Science at the University of Zimbabwe, Harare, Zimbabwe (1986-1991). This project was only partially successful; partly because of the flawed assumptions upon which the project was based and partly because of the lack of clearly defined roles and responsibilities between the collaborating institutions. The intellectual content of the project was largely carried by the entomologist, who gave it legitimacy through project documentation and who was mainly responsible for project reporting. The impact of the work conducted by ENDA is more difficult to assess in terms of impact and there is no clear indication that there was a strong impact among communal farmers though the project has influenced follow up projects. The lack of availability of a project file was a problem in this evaluation.

4) The **Groundnut Improvement Project Phase III (Project No.: 87-0038)** was run by the Department of Agronomy and Forestry Engineering at the University of Eduardo Mondlane, Maputo, Mozambique (1987-1990). The impact of this project cannot be understood outside the context of the full extent of Phase I to III (1980-1990). This project had many of the ingredients which facilitate a successful project in terms of impact. It had strong intellectual leadership, which facilitated important linkages between institutions and facilitated capacity building in the important area of food security. The war in Mozambique and the departure of key expatriate and Mozambican personnel to conduct Ph.D.'s has influenced the project outcomes and impact negatively. The lack of availability of a project file and the absence of project personnel were problems encountered in the evaluation.

Despite the varied institutional contexts (two universities, one NGO, one government department) the extent of the impact on the public good made by each project was closely tied to the continuity of committed academic leadership. A critical factor for a successful project with impact at several levels (e.g., local, national [policy development] and international) was the existence of a committed, hard working and insightful academic who championed the project by giving it legitimacy

through publications and who mediated between the various other interested parties to achieve impact. The institutional, bureaucratic and cultural context within which such individuals operated also had a large influence on project outcomes in terms of the "public good". This dynamic relationship between motivated individual and institutional context were the key factors that determined research outcomes in this case-study.

Three of the projects had this quality of committed intellectual leadership to various extents. Bureaucratic inertia, lack of continuity in leadership, lack of clearly defined roles between collaborating institutions, flaws or difficulties in the project assumptions, drought and war were the key factors which militated against the impact.

2. METHODOLOGY

The methodology used for this case-study evaluation was multi-faceted. The key instrument used was a qualitative social science methodology. This social science perspective provided a multi-stranded conceptual and methodological framework, (see below for details on this) to interpret the more specific evaluation framework, the concept paper and the terms of reference. In regard to this case-study on "public good", the assessment framework was situated within a set of ideas about analyzing the public good.

The various strands in the conceptual and methodological framework used for this study can be briefly identified as follows:

1) A political economy perspective was used in assessing the "public good". For example, the following processes that affect "public good" were seen against a background of broader political and economic issues and hierarchies: capacity building, improved livelihoods, impact on policy and conceptual debates, training, lack of performance, lack of outputs.

2) The second strand was the evaluation framework itself which was therefore utilized and interpreted within the broader context of this particular theoretical orientation.

3) The third strand was the research instruments which included interviews, documentary reviews, informal and unstructured interviews in country and in the field and file reviews (i.e., the data collection).

4) The fourth strand was the analysis that arose as an outcome from the exercise.

Each project was first evaluated in exclusion from the other projects on the basis of the evaluation framework. Specific issues within each project became the focus for understanding the impact and therefore the way in which the evaluation framework was used was selective and contextual rather than mechanical. For example, in the Pasture Improvement Project it very quickly became evident that the bureaucratic difficulties associated with using the funds was a key issue in restricting the impact of the project. Outputs reach and impact were not elaborated because these were highly restricted. What was useful and interesting was to focus on what factors caused the lack of output and this therefore became the subject of investigation. Thus, project specific issues, such as lack of output, led to a discussion of "bureaucratic seizure" in regard to the funding or conversely, evidence of capacity building in the "Cattle Management Project" led to a discussion of "strength of intellectual leadership". These broader domains then became the subject of comparative analysis between the various projects as the evaluation proceeded (see 7.0, table on summary of project components).

Interviews were held for each project with the available and relevant staff at the recipient institution. Further interviews were held with

individuals in institutions or levels that were affected or should have been affected by the project (see appendices). Documentation was selectively secured for each project and the project file, when available, was reviewed (see appendices). Field visits were made for two of the projects and targeted beneficiaries were interviewed. Contactable IDRC project officers were questioned.

PROBLEMS WITH DATA COLLECTION

As some of these projects were over ten years old, problems in data collection included:

- lack of available project documents (three projects had this problem);
- lack of contactable project personnel three projects had this problem);
- lack of contactable Project Officers (three projects had this problem);
- lack of rigorous institutional response from recipient organizations (two projects had this problem); and
- lack of file availability (the project files were either lost or unobtainable for two of the projects).

These factors influenced the selection of issues for consideration and the type of analysis that emerged from this case study. The lack of ability to converse in Portuguese was a limiting factor in one project.

3. COMMUNAL CATTLE MANAGEMENT PROJECT-ZIMBABWE (Project No.: 86-0188) Project Dates 1987-1993

3.1 DESCRIPTION OF PROJECT

This applied social science project involved the identification, description and analysis of current grazing schemes in Zimbabwean Communal Lands as part of a broader research initiative on natural resource management in communal lands undertaken by CASS at the University of Zimbabwe. An initial survey of grazing schemes was conducted and then five case-studies of grazing schemes were selected for further field research (i.e., Chamatamba, Mutakwa, Maraire, Mangezi and Machingo) (Cousins 1992).

This project:

- conducted policy relevant analysis which fed into the Land Tenure Commission's findings (interview project leader);
- developed a useful conceptual framework (interviews with university researchers working on the CAMPFIRE program);
- initiated institutional building at local and university level and with a government agency; and
- developed networking between interested parties (interview project leader, project reports).

Local communities involved with grazing schemes were integrally involved in the research process as were government agencies (e.g., Agritex, Agriculture and Rural Development Authority) and other stakeholders (eg., University Departments, Lutheran World Federation) (interviews with university of Zimbabwe academics). Prior to this research project, research analysis of communal cattle management focused narrowly on the technical arguments concerned with carrying capacity, rotational grazing and overstocking. This project directed and broadened debate towards institutional structures, tenure systems, political dynamics and common property analysis (Cousins 1992a, interview with current and former Director CASS).

CONTEXT

PARTNER INSTITUTION CAPACITY

According to the former Director of CASS, in the mid-1980's IDRC funded research projects which focused on research capacity building in Third World research institutions. The Communal Cattle Management Project, like all the projects in this case-study, is an example of a project which attempted to develop capacities of research institutions and individuals, allowing for a developing country to acquire more research independence and to claim ownership of the research process within the national context.

At the time, this refreshing approach was welcomed by CASS. The Centre was forging important links with government departments (e.g., with the Department of National Parks on the Communal Areas Management Programme For Indigenous Resources - CAMPFIRE) and framing important research projects concerned with natural resource management in the communal areas of Zimbabwe. In this research and funding context, the Communal Cattle Management Project was designed with capacity building as a key motivation (interviews at recipient institution,). The project summary mentions capacity building as one of the key achievements of the project.

SITUATION PRIOR TO PROJECT IMPLEMENTATION

The whole issue of communal cattle management had previously been very loosely handled by government (interview with former Director CASS). The assumption was that an inevitable and inexorable "tragedy of the commons" (See Hardin's 1968 article by this name) would worsen over time because of an ingrained and culturally based attachment to cattle (cattle complex), unless destocking and rotational grazing were introduced by government authorities (Cousins 1992a). The emphasis of this project was on modifying this set of ideas and introducing a new set of criteria for cattle management in the communal areas of Zimbabwe. The project effectively injected into the debate the broader issues of institutional arrangements for managing common property resources (interview former Director CASS) by conducting workshops at several levels. The project occurred at a time when there was a shift in management strategies, in line with structural adjustment policies, away from centralized control of natural resources to community based/local management approaches (Cousins 1987-1992 publications).

CONTEXTUAL FACTORS AFFECTING OUTPUTS

This project linked up directly to the IDRC funded, sustained programmatic research effort for the CAMPFIRE program on community based natural resource management of wildlife and other resources in the communal areas of Zimbabwe (interview with project leader also see K Billing's case-study on Natural Resource Management Project). Most significantly, the CAMPFIRE program provided a context in which the conceptual framework, methodologies and research results emanating from the Cattle Management Project could be utilized and contextualized within the evaluative and monitoring work that CASS was producing for the CAMPFIRE program (Cousins 1992 and interviews with recipient organization). At the time of the project, CASS was in its early stages of developing into a centre of excellence in the social dimensions of natural resource management in Africa (project leader interview). It was also searching for a theoretical approach, models and frameworks to understand and analyze the CAMPFIRE program. According to CASS staff, the main researcher's adoption of common property analysis for his project on communal cattle management directly influenced the other researchers conducting work on wildlife, forestry and other issues.

The Communal Cattle Management Project took place when CASS' work and administrative load was relatively small. Administrative problems associated with donor fastidiousness, university administration

inflexibility and inefficiency which subsequently affected CASS did not impact on the substantive outcomes of the project (interviews at recipient institution). The final project reports were delivered late because the researcher had left the country (project file).

OBJECTIVES

The overall objective of the project was to facilitate the improvement of sustainable communal cattle management in Zimbabwe (project summary).

The Communal Cattle Project met all the stated specific objectives:

- Identified and analyzed the decision-making process regarding livestock grazing at the household and community level.
* Provided a set of criteria to be used in developing communal pasture programs.
* Analyzed social differentiation in the communal areas in regard to cattle ownership and access to grazing land.
- Analyzed institutional arrangements through which current grazing schemes are managed.
* Enhanced local and regional institutional capacity for addressing these issues (project summary, Cousins 1992a, interviews with beneficiaries)

The project successfully met its stated objectives by developing a set of criteria that could be used to develop communal pasture programs (interview with recipient institution) It thereby facilitated the improvement of sustainable communal cattle management in Zimbabwe. The project went far beyond these objectives by broadly contributing to the extension methodologies (interview with Agritex personnel) and common property resources debates (see appendices) about the social dimensions of natural resource management in Southern Africa, a critical issue for environmental management in the region (interviews with former Director CASS, former research fellows CASS, Agritex Staff, interview with Deputy Chairman Chamatamba Grazing Scheme, Review of Documents).

STRATEGY

PROJECT SPECIFIC STRATEGIES

The means and methods employed to achieve project objectives were:

1) The identification and evaluation of 31 existing grazing schemes through both documentary and field research. (Cousins 1987 and 1988 publications).

2) An account of the history of grazing schemes and different perspectives and approaches through time undertaken through documentary research (e.g., see introduction to Cousins 1987 and Cousins 1992a publications).

3) The establishment of five case-study sites in three different communal lands in order to conduct more intensive field work and analysis based on participatory approaches, including focus groups and workshops. The methods employed for the case-studies included:

   - questionnaire surveys;
   - interviews with key informants;
   - cross-checking of interview data (triangulation);
   - participant observation of community and committee meetings;
   - participation in community work sessions;
   - cattle following;
   - monitoring the use of grazing areas; and
   - perusal of local records and documents (see Cousins 1992a document, Room For Dancing On, which details the methods and findings of the Communal Cattle Management Project).

These methods involved the training of 13 research assistants.

4) The development and dissemination of a conceptual framework and the lessons drawn from the case-studies (2 workshops and 20 related publications; see appendices) (project file, interview with main researcher).

All those consulted considered the strategies used in this project to be appropriately participatory, but further follow up after the end of the project should have been made to disseminate the research results and to make them more accessible. (Interviews with University Staff, Govt Departments).

INPUTS/ACTIVITIES

IDRC INPUTS

TABLE 1 (Communal Cattle Management Project Finances)

Main Budget Line Items (Canadian Dollars)

Salaries and Allowances	C$32,900
Research Expenses	C$33,700
Support Services	C$2,300
Equipment	C$24,800
Publications	C$3,500
Workshop	C$4,300
Total Recipient Administered	C$101,500
Contingency	C$10,000
IDRC contribution	C$111,500
Recipient Contribution (Research Fellowship)	C$39,000
Actual Expenditure	C$95,544.71

(Source: Project Summary and IDRC Financial Information)

IDRC contributed an actual total of C$95,544.71 over the research period from 1987-1993, that is, the proposed three years plus two extensions. The budget totalled C$111,500.00 and the variance was C$15,955.29 (IDRC financial information). This amount supported salaries and allowances, research expenses, support services, equipment including a vehicle, plus a workshop and the funding of a publication (project summary).

IDRC project officers played an important and appreciated role in the beginning of the project (interview former Director CASS). The partner institution stated that the contact with IDRC officials was highly appreciated, that it contributed to productivity and that more contact with officials is desired on the further projects which CASS/IDRC have launched. It was stated that more contact than is currently the case is desirable because this would facilitate the administration, the linkages and the substantive issues raised as projects proceeded. In particular, the flexibility with which IDRC administered the project in regard to line items (e.g., project vehicle) and extensions was appreciated and identified as highly beneficial. This flexibility was contrasted with the alleged unnecessary bureaucratization of other funding agencies. The flexibility enabled the outcomes and impact to be strengthened (e.g., see list of publications arising after 1990 because of the project extensions) (interviews held at recipient institution).

IDRC funded a workshop entitled "Institutional Dynamics in Communal Grazing Schemes in Southern Africa" in December 1990 as part of the project. The German Technical Aid (GTZ) and the Agricultural and Rural Development Authority (ARDA) as well as the IDRC sponsored an earlier workshop in September 1988 entitled: People, Land and Livestock. Both proceedings were published with the respective sponsorship (see appendices). The two workshops were directly linked to the project in that they provided a forum for presentation of project findings and for networking and exchange of ideas between academics, policy makers and implementors (proceedings of the workshops, interviews with project beneficiaries).

Interviews and a review of the file indicate that IDRC managed this project in a productive manner through using the following inputs and activities:

1. Creating a link with a potentially vibrant institution which was developing a critical mass of scholarly endeavour at the time. Timing of funding was a critical strategy in capturing the initial momentum and excitement of a new and relevant investigation (interviews with CASS staff).

2. The institution had a committed and intellectual leadership which was well placed to encourage the networking effects cited as achievements of this project (consultants observation).

3. Individual talent and commitment were encouraged through a flexible, adaptive and supportive relationship with IDRC (interview with former Director CASS).

4. IDRC's link with the participating institution reinforced and supported the structural, capacitating and conceptual aspects of the project (see section on reach and impact) (interview with former Director CASS).

5. IDRC funding of this project encouraged funding of other IDRC funded CASS projects (Natural Resource Management Phase I, II and III followed) through this institution (interview with current and former Director CASS, interview with CASS staff).

RECIPIENT INPUTS

The recipient institution funded a research fellowship position for the initial three years of the project. It also provided strong theoretic and applied leadership through the Director at that time, Professor Marshall Murphree.

3.2 PROJECT OUTCOMES

OUTPUTS (Products, Services, Processes)

Two policy relevant workshops (45 and 27 participants) took place towards the end of the project which disseminated research results (see appendices). Only one of these, "Institutional Dynamics in Communal Grazing Regimes in Southern Africa" (27 participants) was fully funded by IDRC at a cost of $C5000. Twenty publications resulted from this project (see appendices). A conceptual framework concerning common property theory was presented through workshops and publications and was adopted by researchers involved in evaluating and monitoring the CAMPFIRE program. The framework provided a concptual tool for understanding how local institution building for natural resources was connected to land tenure and provided a basis for understanding and creating communal common property resource management regimes for both wildlife and cattle mangement.

An unspecified number of workshops and focus groups took place in each of the case-study areas, and the capacity of the grazing scheme committees was enhanced through institutional development (see reach and impact) (interviews with CASS staff, interview with Deputy Chairman Chamatamba

Grazing Scheme). Agritex staff (described in project documents as a "host of extension supervisors and extension workers") involved in the data collection were simultaneously trained in the institutional dynamics of communal grazing under the support of this project (Cousins 1992). Thirteen research assistants were trained to collect data and analyze it. The main researcher obtained his Ph.D. in 1996. (project documents, interviews with project personnel and beneficiaries)

REACH AND IMPACT

The immediate users of the research results were the university and the academic community, government agencies and local communities. The intended beneficiaries of the project were: the university, government agencies and communal area families (project summary). All three of the these groups were touched by the project or its activities in some way (see below for details).

LOCAL COMMUNITIES

A representative of the Chamatamba Grazing Scheme, was full of praise for the project and claimed that the researcher conducted his research in an open and participatory manner and that the local community greatly benefited from his presence (interview Deputy Chairman Chamatamba Grazing Scheme). Indirect benefits cited were the organization by CASS/the community of funding from the Beit Trust for a windmill to supply water. Mr. Munemo, Deputy Chairman Chamatamba Grazing Scheme, claimed that the researcher was full of practical ideas and help for organizing the community based grazing scheme and the institutional development associated with it. Although the windmill was not a direct outcome from the research itself, the field work/research involved other practical applied mechanisms to increase the livelihoods of communal families through:

* promoting the emergence of local institutions which have legitimacy and are effective decision-making bodies through group discussions/workshops.(for example the researcher worked with the Chamatamba and the other Grazing Scheme Committees, exchanged ideas and formulated joint approaches to decision-making problems)

* assisting in the evolution of a legal framework (i.e., a set of grazing management by-laws) which is locally accepted and enforceable; (the researcher's work with the committees involved the discussion and implementation of local grazing management by-laws. His role was evident at the Chamatamba Grazing Scheme and this was stated in interviews held)

* encouraging resource planning and management by local institutions which build on local ecological understandings; and

* facilitating bargaining and negotiated compromises between communities and user groups within communities in cases of conflict (through focus groups and through farmer's workshops held in case-study areas). (Source: Cousins 1992a)

The following project impacts were cited by beneficiaries of the project:

1) Labour inputs into herding dropped (interview former Director CASS).
2) Grazing scheme institutional developments which could be utilized for other aspects of natural resource management (i.e., the grazing committees were able to organize around other resources eg water, wildlife, fishing, etc) .
3) Better prices for cattle (interview former Director CASS).
4) A natural resource management regime was created for the community. By-laws expanded to control aspects of other resources (Deputy Chairman, Chamatamba Grazing Scheme).

5) It was stressed by all concerned with the project that great effort was made to hold feed-back meetings at community, government agency and university level. This methodology impacted on the way in which these groups conducted their activities (interview with Examiner of researcher's dissertation, interview with CASS Staff, interview with Agritex staff, interview with Chamatamba Grazing Scheme representative).

It was clear that the project had a large impact on motivating the institutional process of both communal cattle management and natural resource management at the local level.

GOVERNMENT AGENCIES

Agritex was integrally involved in the collection of field data with local and university research assistants and in a farmer's workshop (project documents, interviews with Agritex Staff). Agritex management staff reported that extension staff changed the focus of their extension work from technical issues towards social and institutional issues as a direct consequence of the project. At the beginning of the project, extension workers focused on cattle numbers and carrying capacity. By the end, they focused on social aspects, farmers attitudes and institutions for managing local resources, that is, the issues that had been ignored in the past and that were the real obstacle to successful communal cattle management.

THE UNIVERSITY

Interviews with academics affected by the project indicated that the participatory and extension aspects of the research, as well as its content and analysis, were exemplary and that the University and researchers in this field had greatly benefited from the dissemination of the research products, in both the short-, medium- and long-term (interview with Internal Examiner of researcher's dissertation, interview CASS staff). The goodwill generated by this project, in at least one of the grazing scheme sites, facilitated a follow-up gender related project involving collaboration between a prominent international scholar and a local Zimbabwean (interview Chamatamba Grazing Scheme representative, interview former Director CASS). In terms of direct policy influence, aspects of the Land Tenure Commissions technical reports were influenced by the research project (interview with recipient institution, interview with researcher)

The impact of the program was felt most strongly in the short term at the university and at the community level. In the long term, the project had significant impacts in terms of policy development, research extension and conceptualization of the social dimensions of natural resource management in Zimbabwe and Southern Africa. Common property analysis, which was the foundation and theoretical framework for the project, became the most significant model for analysis of the CAMPFIRE program after the researchers presentation of his work at the workshop entitled "Institutional Dynamics in Communal Grazing Regimes in Southern Africa" (interviews with recipient institution).

The impact at the community level can best be seen through the contribution made by the project to the development of successful grazing management schemes. As Mr. Munemo of the Chamatamba Grazing Scheme pointed out, the research was geared towards benefitting community outcomes. In fact, the project influenced much broader debates about the social dimensions of natural resource management in Southern Africa (see sections below on conceptual and capacitating aspects of the project).

The former Director of CASS indicated that IDRC's investment in this project has been highly beneficial in regard to the structural, conceptual and capacitating aspects of this project.

STRUCTURAL

The research involved a productive structural link between the IDRC and the partner institution. In turn, the project fostered links between partner institutions and other interested parties on three levels: community, government agency and national level (policy debates).

1) Local communities were integrally involved in the acquisition and dissemination of the research results through a participatory research methodology (project documents).

2) A selected government agency (Agritex) was integrally involved in framing the research, the collection of field data and in the dissemination of the research findings. (The researcher's previous work through Agritex had prompted his involvement in this research project).

3) The research linked up with and informed important policy debates, including the Land Tenure Commission as well as helping in the conceptualization of theoretical issues important for monitoring the CAMPFIRE program (interviews with CASS staff, project leader).

CONCEPTUAL

The research methodologies (participatory fieldwork, analysis of the quantitative and qualitative data) and the dissemination were exemplary and provided an important model for future research (interview Internal Examiner of researcher's dissertation). The conceptual model focusing on common property theory used for the Cattle Management Project was used by or referred to by most of the scholars involved in evaluating the CAMPFIRE program (interview, Director CASS).

CAPACITATING

The project increased capacity at CASS and in the region through the high level training in the social dimensions of natural resource management. According to the current and former Directors of CASS, this key project encouraged further IDRC funding (Joint Ford/IDRC Natural Resource Management Phase I, II and III followed this key project). The skills of the researcher in analyzing common property regimes are now being applied within the Southern Africa region. The project thereby enhanced the capacity for critical enquiry into the social dimensions of natural resource management at CASS as well as in the Southern Africa region. This work influenced at least three other successfully completed Ph.D.'s, as well as the work of six other research fellows (interview, Director of CASS). The quality of the documents and the analysis was very high and though exemplary attempts were made to disseminate the results, more could have been done to promote the publications and the workshops. Also follow-up on this project through further research and dissemination activities should have taken place to increase the reach and impact of the project. Factors affecting reach and use or non-use of the research included:

1. Networking within and outside the project. Despite the existence of networking through workshops and the involvement of interested parties, some key government players claimed that they were not sufficiently consulted nor affected by the research. An individual who had attended one of the workshops claimed that he and his organization had not been sufficiently touched or affected by the research. The project had made efforts to include interested parties but individual motivation to use the research findings was lacking in this case (consultants observation). In another case, a senior official in a government department expressed the opinion that the research should have been directed/channelled through that department. The individual was aware of the project but claimed not to have been affected by it and was more concerned that the government department should direct the research.

2. The receptive and supportive environment for the analysis at the university highlighted the usefulness of the project. The common property issues in the Communal Cattle Management Project's institution building at the local level were the same issues that researchers involved in documenting the CAMPFIRE program were dealing with in regard to local institutions for managing wildlife. The project was therefore relevant to other research taking place at the time. (Interviews at recipient institution).

3. The structural adjustment program emphasis on decentralization highlighted the timeliness of the project. The focus on local institutions meshed well with Government policies to decentralize aspects of its control over certain natural resources. The research therefore came at the right time as far as policy development is concerned.

This project can be regarded as a major achievement by IDRC and its partner institution in conceptually opening critical debates about common property resources and in its impact on structures for managing communal resources both in Zimbabwe and in South Africa (consultant's observation). For example, a 1997 workshop entitled "Natural Resource Management: Ways forward for South Africa" undertaken by the School for Local Government, University of the Western Cape used material from the Communal Cattle Management Project as useful conceptual and case-study material for NGO's working in the field of natural resource management in South Africa.

3.3 *ENHANCEMENT OF OUTCOMES*

It was identified by project personnel that CASS could or should have followed-up the project with further research and dissemination. Interviews with CASS also indicated that publications emanating from CASS on this and other projects should have been directed to a broader audience. The project should have continued to ensure that the findings of the project were incorporated into policy decisions and through extension methodologies (interviews with CASS). The participating institution should have followed-up options to extend the project which, according to project personnel, did exist at the time (interviews with CASS). The issue of the project being dependent on the presence of one or two key personnel was identified as a problem. (i.e., the existence of a committed and hard working, insightful, intellectual researcher is positive when the researcher is present but negative when the researcher goes away).

A broader dissemination of the research results during and after the project would have reinforced its impact on government agencies. (interviews with Govt agencies). For example, Veterinary Services and the Farming Systems Unit of Research and Specialist Services (Government departments) did not feel the impact of this project (interviews with representatives from these institutions). This occurred despite the exemplary manner in which research findings in this project were disseminated (interview with Internal Examiner of candidates Ph.D. dissertation). There is, therefore, a need for more comprehensive networking and collaboration between government agencies and researchers (recipient institution and Government Agencies mentioned this). Having said this, IDRC should be warned against initiating research agendas through government agencies alone. Government is currently putting pressure on the University of Zimbabwe to be accountable to them for the research agendas that impinge on their governmental areas of jurisdiction. Given the fact that the University has already lost some of its autonomy to Government through the University Amendment Act, the trend towards bureaucratization of knowledge should not be encouraged.

Recipient organization staff indicated that close links between the Project Officer and the participating institution is a vital component for successful outcomes (interviews with current and former Directors of CASS).

The Project Officer should not be overworked so that due attention may be given to each project (interview with recipient institution staff). IDRC flexibility in administering the project was greatly appreciated by the recipient institution, as was the workshop held in the late 1980's concerning "Grantees and IDRC's Administrative Requirements". (Interview with former Director CASS).

The results could be further enhanced if the process, impact and results of this project had been documented in a form that was more accessible to the international development public. For example, a documentary film outlining the problems of communal cattle grazing and the broader questions of natural resource management in communal areas of Zimbabwe could highlight the participatory process undertaken in this project, the manner in which this initial grant led to the Phase I, II, and III FORD/IDRC grants on Natural Resource Management, the importance of the linkages between IDRC and partner institutions, partner institutions and government agencies and government agencies and local communities. Such a documentary could also highlight the effect the project had on capacity building in Southern Africa, opening critical debates about the management of natural resources, as well as illustrating the link with CASS' other work on evaluating the CAMPFIRE program. The results could have been further enhanced through the distribution of a newsletter and the eventual setting up of a listserver to cater for regional and international interests.

ENHANCING OUTCOMES AT COMMUNITY LEVEL

A second phase of the project could have identified issues at local level to enhance further implementation of community based grazing schemes based on the findings of Phase I. A newsletter distributed at local level could have updated communities on recent developments.

ENHANCING OUTCOMES AT GOVERNMENT AGENCY LEVEL

Local government could have been targeted as a key institution influencing outcomes in communal areas (interview with Agritex staff and recipient institution staff). Follow-up and dissemination of the research findings through more accessible and shorter pamphlets and publications could have been targeted for key institutions. Agritex staff, for example claimed that while the research was useful they did not receive enough copies of the research findings.

ENHANCING OUTCOMES AT REGIONAL LEVEL

Application of the analysis to aspects of natural resource management and to grazing schemes on a regional and comparative basis could have been funded and linkages and collaboration between institutions working in this field could have been supported. In this regard, the project would have benefited from Information and Communication Technologies (ICTs) by the linkages afforded through email and through the setting up of a listserver. The lesson to be learnt for future projects that illustrate committed leadership, broad participation and prolific output is that IDRC needs to recognize earlier when their funding has been productive and should move promptly to encourage maximum exposure of the outcomes and results of the project.

SUMMARY OF KEY FACTORS

As this project has many of the ingredients of a successful project, I believe it provides a useful model for evaluating other projects.

The key factors which promoted success of the project were:

1) Strong committed leadership of the project and of the partner institution.

2) Commitment by key researcher to the research agenda and to the clients or users of the research outputs. This is evident from the close links that were established with the three categories of beneficiary: university, government departments and local grazing schemes through workshops.

3) Recipient Institution identification of a key issue for research which has the potential to impact broadly on specific outcomes reach and impact and which has tangible benefits for increasing livelihoods.

4) The ability of the project to form linkages at local, provincial, national and regional levels (e.g., in Southern and Eastern Africa).

5) The potential for the project to link up with other incipient or existing programs and networks (e.g., the CAMPFIRE program).

6) A commitment on the part of the project to disseminate research results and feedback at local, provincial, national, regional and international levels.

7) The commitment of IDRC to a flexible facilitative arrangement with the partner institution.

8) Close links between IDRC and partner institution at the beginning of the project was identified as a highly beneficial factor. Interviews indicated that close links existed at the start of the project but according to the recipient institution, project officers appear to have too many projects under their management for these links to be maintained throughout the life of the project.

Factors that hindered impact included:

1) The "turf" or territorial mentality of government departments hindered communication of the results.

2) A general conservatism in the political culture hindered use of the results.

3) The inertia of bureaucracies including the university, government agencies.

4) The existence of rural elites who could co-opt and monopolize benefits from grazing schemes at the local level.

5) The difficulty of translating complex research into ideas and concepts that become part of mainstream thinking.

TABLE 2

Communal Cattle Management Project Impact (No.: 86-0188)

Potential Beneficiaries	How Benefit	Mechanism	Actual Extent Benefited	Future Benefit Potential
University	• Knowledge	• Conceptual Development	• High	• High
	• Capacity Building	• "critical mass of scholarship" increased	• High	• High
	• Policy Formulation	• Debate fed into Land Tenure Commission/ CAMPFIRE	• High	• High
Government Agencies	• Agricultural Extension Methodologies	• From cattle numbers to people (improved extension)	• High	• High
	• Networking	• Linkages between gov't/institutions/ researchers/NGO's	• High	• High
Local Communities	• Institutional Development	• Promotion of local institutions	• High	• High
	• Natural Resource Management Regimes	• Promotion of land use planning	• High	• High
	• Increased Livelihoods	• Labour inputs dropped	• Medium	• Medium
	• Increased Income	• Better prices for cattle	• Medium	• Medium

4. THE PASTURE IMPROVEMENT PROJECT-ZIMBABWE (Project No.: 87-0022) Project Dates: 1987-1992.

4.1 DESCRIPTION OF PROJECT

The recipient organization for this project was the Department of Research and Specialist Services, Ministry of Agriculture, Harare, Zimbabwe. The project intended to develop appropriate forage production techniques and technologies for the communal areas. The project set out to conduct on-station trials on a range of strains of legume forages (e.g., Desmodium, Centrosema, Glycine, Sicatro and Stylo) and dual purpose legumes (e.g., cowpeas, pigeon peas and lab-lab) and to test on-farm the pasture improvement technologies through the Farming Systems Research Unit in Research and Specialist Services. Communal area legume seed production and distribution was to follow.

The pasture improvement project has some classic lessons to offer internationally funded development research. The project was crippled by lack of leadership, administrative and bureaucratic red tape, lack of accountability, and drought. (project file, interview with recipient institution). The funds for the project only became available three years after IDRC approved the project in April 1987. Initial funds were remitted by IDRC in December 1987, but the funds were not released from the Zimbabwean Department of Treasury until March 1990, only three months before the original project termination date. Consequently, the project was extended until December 1991. The recipient institutions file stated that funds were not carried over to the 1992 financial year. Correspondence within the file refer to alleged "lost funds" and to equipment that never arrived.

The main investigator, Dr. John Clatworthy, left the participating government department before the project started. In response to the on-going restructuring of the civil service, the project suffered greatly from lack of continuity of project personnel, and lack of committed leadership and supervision (interview recipient institution). When the funds finally became available, the 1991/92 drought crippled the project by negatively affecting the on farm trial results (available project reports, interview with Director of Grasslands Research Station). Incomplete documentation exists for this project and a complete post-project summary (PCR) could not be written for IDRC records.

CONTEXT

Dr. Clatworthy wrote the project proposal at a time when he was advocating for Pasture Improvement Research and specifically for research into forage legumes to be extended from the commercial areas into the communal areas (project summary). Dr. Clatworthy was reportedly well connected to research networks and an innovative component underpinning the proposal was the planned extension aspect through the "Farming Systems Research Unit" (project summary, interviews at recipient institution). Dr. Clatworthy left Research and Specialist Services before the project funding became available. Reportedly, the turnover in project personnel was due to poor conditions of service (interviews at recipient institution). This is a key aspect of the research context which IDRC needs to take note of. Funding institutions which do not reward or give incentives to their personnel, and which are dependent on slow moving bureaucracies may result in negative outcomes. Restructuring of government and budget cuts on research and extension institutions also adversely affected the outcomes of this project. (interviews and file records at recipient institution).

The adminstrative and institutional context impeded successful development research and provide a clear message about how not to administer research funding (consultants observation). The funds were enmeshed in multiple competing layers of bureaucracy which inhibited progress, as well as

causing allegations of misappropriation of funds (project file, interviews with recipient institution). For example, administration at Grasslands Research Station had administrative negotiations with Makoholi Research Station over non-payment of casual workers employed by Makoholi to work on the project (project file). The Grasslands Research Station had on-going administrative negotiations with their head office (Department of Research and Specialist Services) over procurement and expenditure of funds. The head office in turn had to defer to the then Ministry of Lands Agriculture and Rural Resettlement. The latter ministry reportedly had problems securing funds from the Ministry of Finance and the Treasury. According to interviews these multiple and competing bureaucracies had difficulty administering the funds in an accountable and transparent manner. Despite visits by IDRC staff, administrative inactivity and lack of follow-up were mentioned in IDRC correspondence with the recipient institution as key problem areas (project file). These problems were a result of poor administration and lack of leadership.

The alternative strategy suggested by government employees themselves is that an IDRC office administers the funds directly to the recipient or a trust fund be established by the institution for self-administration of the funds. This would have the advantage of creating a direct link between IDRC and the recipient Institution, but would not solve the problem of the lack of leadership identified in this project. (The Centre For Applied Social Science (CASS) at the University of Zimbabwe, which is another IDRC partner Institution in Zimbabwe is currently experimenting with the establishment of a trust fund to overcome administrative problems within the University.)

OBJECTIVES

This project set out to develop low input pasture production technologies appropriate for the resource poor farmer within communal areas of Zimbabwe.

Its specific objectives were:

1. To introduce and evaluate forage legumes.

2. To introduce and evaluate dual purpose (forage and pulse) legumes.

3. To measure the residual effects of forage legumes on the performance of forage crops.

4. To disseminate appropriate forage conservation technologies.

5. To produce legume seed (selected from twenty strains including Desmodium, Centrosema, Glycine, Sicatro and Stylo) and distribute it in the region (project summary).

Broader objectives included:

6. Networking and collaborating between Grasslands Research Station, Mokoholi Research Station, Farming Systems Research Unit and other government departments.

7. Linking with other IDRC funded projects and conducting multi-disciplinary research as well as linking up with the Pasture Network for Eastern and Southern Africa (PANESA) network.

8. Conducting on-farm trials.
(project summary)

Very little evidence of meeting any of these objectives exists, though interviews with recipient organization personnel and project files indicate that on-station trials were held during the drought years which tended to negatively impact on the research work because of lack of growth of the forage legumes. The project did not create a link between institutions

involved in on-station research (Grassland Research Centre) and on farm research (Farming Systems Research Unit, Agritex).

STRATEGY

The research strategy was reduced from on-station and on-farm trials to on-station trials alone because of the administrative problems, lack of leadership and ensuing drought. The first year of actual ground implementation for these trials was July 1989 to June 1990. Twelve forage legume accessions were planted under maize on 5.4 by 5.5m plots at Grasslands and Makoholi Research Stations. The preliminary results were inconclusive and adversely affected by low rainfall at Makoholi. According to available documentation, which was scanty, further on-station trials took place in the 1990/1991 and 1991/1992 growing seasons on dual purpose and browse legumes. These results were reportedly adversely affected by drought and very little analysis of the results was available at Grasslands Research Centre (recipient institution file, interviews at recipient institution).

INPUTS

FINANCIAL TABLE 3 (Pasture Improvement Project Finaces)

Main Budget Line Items (Canadian Dollars)

Salaries and Allowances	
Technicians	C$59,010
Hands	C$14,350
Research Expenses	
Vehicle	C$12,300
Supplies	C$19,680
Stationary	C$4,920
Local Travel	C$13,530
Equipment	C$37,300
Total Recipient Administered	C$161,090
Contingency	C$17,200
International Travel	C$10,300
IDRC contribution	C$188,600
Recipient Contribution (Salaries)	C$34,840
Actual Expenditure (IDRC)	**C$25,189.03**
Actual Expenditure (Recipient)	unknown

(Source: Project Summary and IDRC Financial Information)

IDRC Financial records indicate that C$188,600 was approved for this project. The budget was C$161,090.00. Actual payments totalled C$25,189.03 and the variance was C$163,410.97. According to a May 1991 memorandum concerning the revised completion date, a C$40,000 final payment was withheld pending receipt of a satisfactory final narrative and financial statement due on the 31 December, 1991. It was not clear whether the final narrative was submitted or whether this was ever paid. Inputs included a project vehicle, and much debate took place over an ordered combine harvester, also associated with the withheld C$40,000, which never arrived at Grasslands Research Station (project file and interviews with recipient institution). Agricultural experimental supplies, equipment,

hoes, bags and fencing were funded by the project (recipient institution file). Salaries were funded by IDRC for research technicians and research hands, but a variance note indicated that technicians were on fixed establishment and therefore could not be paid out of research funds. An appeal was made to IDRC to use the funds towards capital purchases, specifically the project vehicle and the hoped for combine harvester. Stationary, local travel and laboratory supplies were also included. The two personal computers were never ordered because the administrative procedure for procurement through government tender was too complicated and too ineffective (interview with recipient institution staff).

Another result of the administrative *impasse* was that from 1987 to 1990 project personnel were employed by government out of the running costs of the two research stations. A project workshop between the Grasslands Research Station and Mokoholi Research Station was held to define roles and responsibilities within the project, but soon after this the project leader left which held up activities further (project file).

The IDRC project administrator (Agriculture, Food and Nutrition) was involved in correspondence with the Grasslands Research Station concerning alleged "lost funds" (only C$25,200 was spent). IDRC Program Officers had various inputs in attempts to save the project through the project extension (recipient institution file).

A closer link with IDRC officials would have benefitted the administration of the project (interviews at recipient institution). However, the bureaucratic problems within the project extended to IDRC adminstration itself as the purchase of a vehicle was delayed by a miscalculation of Zimbabwe dollar equivalents of the Canadian dollar (project file).

Essentially the project inputs arrived too late to be of any use for the project itself, as the ensuing drought prohibited useful on-station research (project reports, interviews and project file). The project vehicle is seen, however, as a major contribution towards enhancing research at the two stations. Research workers stated how important it was that the vehicle had not been acquired by the government fleet, but could be claimed by the station as a gift from IDRC. It was stressed that they have maintained the vehicle better themselves. The issue of the project vehicle indicates how resource poor the research stations have become through the loss of the human and the technical resources to conduct useful research. The key lesson to be learnt, in terms of project inputs, is that IDRC should circumvent and avoid cumbersome government bureaucracies if their inputs are to reach the partner institution in time to facilitate a productive project (interviews with government employees).

4.2 PROJECT OUTCOMES

OUTPUT

No research publications emanated from this project. No new pasture improvement technology was achieved. No people were trained under the project (interviews with recipient institution, project file, project reports).

Limited negative outputs from the on-station trials do exist. For example tabulated results of the on farm trials in the project reports are inconclusive or negatively affected by drought. Seed dissemination, as envisaged by the proposal, did not take place in communal areas. In general, the project did, however raise awareness about the idea of conducting forage legume research and there is a tenuous link between this project and on-going research in the area of pasture improvement (interview with Agritex staff). Personnel at the Grasslands Research Station claimed that the timing of the project was wrong and that if it were to be funded now it would be more successful. The key benefit cited by the research station is the project vehicle and the agricultural equipment bought under the project.

REACH

The project planned to produce and disseminate seeds in the communal areas and to conduct on-farm trials through Research and Specialist Services Farming Systems Unit. To date, no productive links exist between the Farming Systems Unit (with a focus on socio-economic issues) and the Grasslands Research Station (a focus on technical innovations) (interview with Farming Systems Unit, interview with recipient institution). The idea was obvious, innovative and timely but has not been executed. One reason the project and this linkage did not take off was because of the departure of Dr. Clatworthy, as a result of a decline in conditions of service associated with a restructuring of the civil service after independence. There is, however, an underlying cause which hinders the reach of this and other government oriented projects at this time. Individuals within government departments may become inhibited and de-motivated by poor conditions of service (interviews with government employees). Caught in a circle of lack of resources, lack of job fulfilment, lack of career prospects and lack of accountability, it is very difficult for individuals within these institutions to nurture innovative research projects unless there is a very clear monetary and/or strategic incentive (interviews with government employees).

Grasslands Research Station and Mokoholi Research Station were negatively impacted by the administration of the project. The non-payment of casual workers employed to work on this project was a source of disagreement between the two stations and this fed into the administrative malaise with the head office, the ministry, etc. It was suggested that if the project were to be instituted now, it would be more viable if the funds were placed within a trust (interview with recipient institution). There were no users or beneficiaries of the project in the broader sense.

IMPACT

The planned impact was on pasture improvement through the promotion of forage legumes in communal areas. There were no traceable links between this project and the use of forage legumes in the communal areas (interview with Agritex staff). The key issues hindering impact were the lack of leadership, the administrative problems with the funding and the ensuing drought which crippled the project extension. IDRC attempted to play a role in making the funding available from the Department of Treasury by corresponding with the relevant authorities (recipient institution file) but more could have been done in this regard (Consultants Observation). The project impacted negatively on the adminstration of the research centres but the project vehicle and other equipment are still valued as beneficial for the day to day running of the research station.

In response to the lack of available funding, the scaled down research strategy focused only on "on-station" research and not on "on-farm" research and networking as outlined in the proposal. Even this strategy failed because of the administrative *impasse* and because of a turnover in project leadership. (Three leaders resigned during the course of the project.) Personnel who were de-motivated by the conditions of service were attracted to other employers (the university, commercial enterprises) mainly because of the low salaries at the Department of Research and Specialist Services.

4.3 ENHANCEMENT OF OUTCOMES

1. Recipient Institution suggested that IDRC might usefully review the suitability of channelling grants through government administration and might explore other options of funding innovative research within the government context (trust funds, third party administration through a

commercial firm, setting up IDRC project offices for administration of funds were all suggested during interviews with recipient institutions).

2. The findings outlined in this project indicate that IDRC might usefully evaluate recipient institutions for factors such as:

   * motivation of staff;
   * likely continuity of project leadership (this was identified as a risk in this project but the project was still funded);
   • administrative efficiency and effectiveness;
   • office environment and orderliness;
   * extent of dependence on bureaucracy which may undermine and thwart good management qualities where they exist;
   • recipient instituion indicated that incentive mechanisms should be introduced to encourage productivity, creativeness and networking between interested parties; and
   • research funding for government research agencies should not be administered through the central government administration, but alternative mechanisms should be identified before project funding.
   • There is a need to have an exteneded time-frame for agricultural research projects, particularly where they are going to be implimented in drought prone areas.

SUMMARY OF KEY FACTORS

The key factors affecting success were:

1. Lack of leadership.
2. Administrative and bureaucratic red tape.
3. Lack of accountability.
4. Drought.

TABLE 4

Pasture Improvement Project Impact (No.: 87-0022)

Potential Beneficiaries	How Benefit	Mechanism	Actual Extent Benefited	Future Potential Benefit
Communal Area Families	• Increased Livelihoods	• Improved Forage Technologies	• None	• None
Research & Specialist Services	• Knowledge	• Research into Forage Varieties	• None	• None
Research Networks	• Capacity Building	• Link with Farming Systems Unit, PANESA, etc.	• None	• None

5. THE GRAIN STORAGE PROJECT-ZIMBABWE (Project No.: 85-0286) Project Dates: 1986-1991

5.1 DESCRIPTION OF PROJECT

The purpose of this project was to develop, test and disseminate improved post-harvest grain handling and storage technologies in the communal areas of Zimbabwe. The project involved analysis, data collection and implementation of three new granary designs, evaluation of use of pesticides and new techniques for on-farm, post-harvest storage of maize, millet and sorghum in Zvimba and Gutu Communal areas (project summary, project reports). The project involved collaboration between ENDA Zimbabwe and the Crop Science Department at the University of Zimbabwe (UZ). ENDA provided implementation of the new designs in grain storage technology through on-farm trials and pilot granaries, while Crop Science Department provided analysis, data collection and write-up of results. The technology has not been widely accepted, but the project did contribute to broader debates about grain storage and has had an influence on other projects (e.g., an FAO project and the CIDA/IDRC supported Food Security Project) concerned with food security and post-harvest technologies (interview with available project staff, interview with Development Technology Centre and Crop and Soil Science Department, University of Zimbabwe).

This project was based upon the assumption that the new "improved" granaries advocated through the project were better because they did not rely on hardwoods and therefore had a benign environmental impact (project summary). The rationale for the project was driven by an environmental factor (the depletion of hard woods) rather than economic factors. The cost of the technology, the changing macro-economic and policy environment, insufficient critical social science perspective (the project did rely on an earlier socio-economic survey) reduced the impact of the project (interviews with academics and NGO's affected by the project). The project contributed to debate on post-harvest strategies, chemical/pesticide use and other applied and theoretic issues through the output of the Crop Science Department (see appendices). The project file was not available from ENDA and a post project summary could not be written on this project because of lack of documentation (IDRC abstract). This places a limitation on this evaluation and its conclusions.

CONTEXT

The project was a follow up to a very similar earlier study undertaken in the 1984/85 storage season in which improved traditional granaries were built and evaluated, a socio-economic questionnaire survey was undertaken and analysis of post harvest strategies took place.

The project was situated within ENDA's total portfolio of activities in communal areas especially their focus on small grains seeds. The issue of grain storage by small scale farmers was correctly identified as a key issue for food security in the region (interviews, project documents). The prevailing policy in the mid 1980's was geared towards successful extraction of surplus grains from the rural areas for the maize milling industry in the larger cities. The preoccupation was, therefore, with providing maize to cities instead of the survival of the small scale farming system and the need for storage in the dry areas. The Grain Marketing Board (GMB) regulated purchasing and processing of grains. Areas of grain deficit were supplied with maize meal which weakened the role of the hardier, drought resistant traditional grains and therefore the farmers motivation to store these. The GMB price control system and the differentials in prices offered for maize versus traditional grains defined the micro-economy in which home level grain storage was situated. In the late 1980's and early nineties, the advent of structural adjustment and the ensuing deregulation of grain prices changed the context within which communal grown grains were traded. (see Andrew Rukovo and Joshua Gwitira's 1994 paper written for ENDA Zimbabwe entitled Small Grains Policy in

Zimbabwe under Economic Structural Adjustment) (Email from former project officer).

The policy and macro-economic environment has had an impact on the need for on-farm post harvest storage. The increase of small scale processing of grains at the local level and a growing local/village level market in maize and other grains is a result of deregulation and decentralization (interview with NGO working in this field). These policy shifts highlight one of the keys to food security, the need for reliable grain storage facilities at the local/village level.

OBJECTIVES

The overall objective was to increase knowledge about post-harvest strategies as a means to encourage household food security and to promote specific technologies which were deemed to be an improvement on traditional technologies.

The specific objectives were as follows:

a) to identify and evaluate the constraints perceived by communal farmers in the post production, on-farm handling and storage of sorghum, millet and maize;

b) to determine the qualitative losses incurred due to inadequate harvesting drying and threshing and the quantitative losses in traditional on farm structures;

c) to introduce new practices for harvesting, drying and threshing and to test their effectiveness with collaborating farmers;

d) to introduce improved structures and practices for on-farm storage and to test their effectiveness over two storage seasons; and

e) to document the successful improvements and disseminate the research results to extension agents farmers and researchers (project summary).

Objective a) was partially achieved (project entomologist), as this objective ideally required formal social science analysis which was not really a focus of the project. Interviews and documentation indicated that ENDA included a social science perspective by including a socio-economic survey. This perspective was not sufficiently reflected in the project documents and analysis which were mainly written by the entomologist.

In regard to objective b) an interview with project personnel indicated that data was difficult to interpret and therefore the analysis was not conclusive.

In regard to objective c) project personnel recommended that further work be conducted to evaluate the extent to which both the practices and the technology was adopted. Project personnel emphasised that good practices were extended to farmers and one of the highlights of the research was mentioned as a participatory workshop conducted with farmers, attended by the entomologist. This was an innovative approach at the time.

According to project personnel, objective d) was achieved. The key question in terms of impact, however is whether the improved structures actually are seen as an improvement by communal farmers. The assumption of the project was that this was the case. However, the cost of building such structures is now prohibitive, the use of pesticides in the structures is both expensive and a health risk, and interviews indicated that the advantage of using the structures is debateable. ENDA claimed that all that now needed to be done was to promote the structures, while an academic and a former ENDA employee both commented that the new technologies were not necessarily an improvement in storage but rather an improvement in

terms of the environmental costs of building traditional granaries. Agritex has a follow-up program through FAO in developing and testing new structures, but their capacity to promote the structures in the communal areas was questioned.

In terms of objective e) there is definitely a link between this project and the on-going research in this area. The results were documented and disseminated as research publications, popular pamphlets and through ENDA's extension activities (see appendices). Modified versions of the granaries continue to be experimented with through the FAO project.

STRATEGY

The project strategy involved collaboration between ENDA and the Crop Science Department (University of Zimbabwe). ENDA was responsible for the implementation aspects for the pilot granaries while the Crop Science Department undertook the analysis and write-up, until the departure of the entomologist on leave towards the end of the project (interview with Crop Science Department).

In the grain storage project six villages were randomly selected in two target districts of Zvimba and Gutu. A survey questionnaire, based on the previous project work was designed and two part time enumerators were selected for each of the 12 targeted villages. With the help of Agritex extension workers, nine participating farmers were selected from each village for quantitative loss assessment. Two farmers per village were selected for assessing improved granaries. Approximately 300 farmers were interviewed and 1-2 enumerators per village were trained to administer the questionnaire. A training program on Post Production Loss Assessment methods was conducted. Sampling of grain from participating farmers granaries was undertaken regularly every month, and then analyzed in the laboratory for weight, moisture content, damage by insects, damage by rodents, discolouration by fungi, and number of insects and species (project report).

Meetings took place in both Gutu and Zvimba villages to introduce participating farmers to the three experimental structures and to allow them to select suitable ones. The structures were as follows:

* The brick structure with a pole and dagga (mud) floor raised on brick pillars.
* The timberless base - no pillars underneath the floor.
* Small capacity structure on vaults.

Each of these structures requires from 2-3000 bricks, 4-6 bags of cement plus other materials (poles and thatching grass depending on the design). The initial project report indicates that 15 such structures (eight in Zvimba and seven in Gutu) were built in the first stage of the project. As a final report was not available it was not established how many structures were built by the end of the project. After completion, the structures were evaluated through both on-farm and laboratory assessments and through interviews with the farmers (project report).

TABLE 5 (Grain Storage Project Finance)

Main Budget Line Items (Canadian Dollars)

Salaries and Allowances	
District Field Officer	C$ 34,540
Research Assistant	C$ 27,700
Secretary	C$ 8,700
Enumerators	C$ 1,000
Research Expenses	
Equipment	C$930
Stationary	C$1,950
Granaries	C$4,200
Final report, Photocopying, Maps	C$3,800
Seminar	C$1,740
Local Travel and per diem	C$60,500
Training	C$12,300
Pick-up Truck	C$15.640
Administration	C$11,900
Total Recipient Administered	C$184,900
Contingency	C$18,600
IDRC contribution	C$203,500
Recipient Contribution (Part-time Salary)	C$17,250
Actual Expenditure (IDRC)	**C$184,900**
Actual Expenditure (Recipient)	unknown

(Source: Project Summary)

According to the project summary the total budget was C$203,500 and C$184,900 were payments made to the recipient institution. This included purchase of a project vehicle, salaries and allowances, research expenses, purchase of a grain counter, local travel and training. An MSc student was not trained as was stipulated in the proposal.

It was stated that the IDRC Project Officer at the time could not have done more in terms of involvement, offering advice and facilitation for this project (former Director ENDA). At one stage, this was ENDA's only project and as it did not have core funding, the project inputs were important in keeping the NGO alive (interview with former Director ENDA). It was however stated by a representative from the collaborating institution that it was not clear to them how ENDA had spent the funds. As the file was not available it was not possible to browse the documentation concerning the administration of the project.

A key issue in this project from IDRC's strategic planning point of view was that the exact roles and contributions of the collaborating organizations were not made clear. The field trials and workshops were conducted as part of both the implementation and analysis but the administration of the funding through ENDA caused problems in how the funding was to be allocated between the collaborating institutions. Crop Science Department may not have received an adequate or equitable amount of the funding for the work that was required (Crop Science Department). As the ENDA project file was lost, it was not possible to probe this question in any depth.

5.2 PROJECT OUTCOMES

The extent to which the technical innovations were adopted has not been identified though there were reports of interest in the new technology from farmers (interviews with University of Zimbabwe academics and with recipient institution). The cost of the technology was seen as a limiting factor by everyone involved in the project except the person who originally designed the technology. The publications that came out of the Crop Science Department (written by the entomologist, see appendices) have carried the project and given it legitimacy. The main project outputs include academic papers, technical reports and pamphlets (see appendices). The linkage between ENDA and its collaborating partner has not remained intact and there has not been any direct follow-up to this project within ENDA itself.

REACH

The key issues which influenced the reach of the project are substantive issues associated with the assumptions made by the project, collaboration issues and administrative issues.

SUBSTANTIVE ISSUES

Despite being a pioneer project, the findings of the project were not conclusive and they did not provide clear evidence for the need to adopt the technology being tested (project entomologist). The project did not provide clear evidence that the "improved" granaries were intrinsically better than the traditional methods (Project Entomologist and Development Technology Centre). The new technology involved more cost and more chemicals but the grain storage was not substantially improved (interviews and project documents). The project assumption was that the granaries were improved from an environmental or forestry point of view; they were not clearly improved from the point of view of the communal area families (project summary and interview with Development Technology Centre). A critical social science and an economic perspective was missing in reviewing the project assumptions (Consultants observation based on a reading of the project summary and analysis of interviews held).
The reach of the project can also be thought of in terms of applied and analytical issues. The applied issues (on-farm trials, field days, workshops see strategy section) influenced on-going research and implementation which has now been taken up by the FAO project on post-harvest technologies. The analysis from this project has fed into on-going analysis of post-harvest systems. The project has therefore become blurred and fused with the work conducted by the Agricultural Engineering Institute and the Development Technology Centre (University of Zimbabwe). The extent to which farmers have adopted the specific or modified technologies is not known, but the interest in modified forms of these technologies persists. (project personnel, Development Technology Centre).

If a final technical report had been completed and if the collaboration between ENDA and the collaborating partner had been sustained, the project would have had more reach for policy makers, industry, other researchers and communal area dwellers (former project officer comment).

COLLABORATION ISSUES

The slippage in the collaboration between ENDA and the Crop Science Department resulted in the lack of a final technical report (former project officer). The entomologist who had written up most of the analysis for this project had left on overseas leave. The issue of adequate funding for the Crop Science Department's role in the project was identified (Crop Science Department). The issue of turf and professional jealousy was identified by the former project officer as a key issue present throughout

this project. This was mentioned specifically in regard to the relationship between government research agencies, who traditionally monopolized this area of research and ENDA. The lack of continuity in the leadership of ENDA also negatively affected the research.

ADMINISTRATIVE ISSUES

The lack of a project file at ENDA reinforced concern expressed in an interview about the administration of the project and its funds (interview with personnel associated with the project). At the time of the project one individual was dismissed from the project for misappropriation of resources (misuse associated with project vehicle) (interview with personnel associated with the project). Details on this were not available but it was reported that this issue did negatively impact on the project (interviews with personnel associated with the project).

IMPACT

The desired impact of this project was not felt. The implication of the research project is that wider scale dissemination of the research results would change post-production grain management systems. The project was based on some difficult or flawed assumptions and only the technical aspects of the project received rigorous attention in the project documents. The project was technology-driven rather than needs driven. This reduced the impact of the project considerably. The project did not have a large impact on capacity building though it did strengthen ENDA's ability to champion the cause of the resource poor farmer as it was ENDA's only funded project at one stage (interview former Director ENDA). The extent to which the resource poor farmer actually benefitted from the project is unknown and is largely indirect. The project informed and contributed to policy development indirectly through contributing to debate about post harvest technologies. Initial project work (1884/85) on grain storage was published as Grain Storage Losses in Zimbabwe, (1990; Dakar: Third World ENDA). The IDRC grant was a follow up to this earlier work. The grant tied together the work of ENDA, the University, Agritex and the Institute of Agricultural Engineering where experimentation was taking place on "improved" designs. The FAO post harvest project conducted through Agritex and the Institute of Agricultural Engineering is cited as a follow up project to the IDRC-ENDA project, as the modified designs have been carried through to this project. The regional CIDA/IDRC food security project was also identified as a user of the research.

The lack of a final technical report reduced the impact of the project (former project officer, entomologist). Personality differences and a lack of clarity about the roles and contributions of the collaborating partners was identified as a reason why no technical report was submitted (interviews). This reduced the impact on policy, industry and other researchers.

5.3 ENHANCEMENT OF OUTCOMES

SUBSTANTIVE ISSUES

The project could have been improved by including a rigorous social science analysis of post-harvest systems, which would have questioned the notion that the new technology was intrinsically better than the traditional/conventional storage system and also would have located the debate within the macro-economic environment. This would include a broader analysis of the communal area context, the policy and economic context and would have been helpful in framing the initial research question or problem, and in making the results more applicable and more useful. The cost of the new technology is reportedly prohibitive and this illustrates the need for this wider perspective in this project.

The project was technology driven rather than needs driven and this was a key limiting factor.

ADMINISTRATIVE ISSUES

ENDA, being an NGO, was not subjected to the bureaucratic red tape mentioned as a problem in the Pasture Improvement Program. Instead, the issue here was the equity of access to funding between the collaborating partners. The outcomes of the ENDA project indicate that it was an academic based at UZ who provided the legitimacy and the documentation for the project, but who was somewhat marginalized from the funding arrangement between ENDA and IDRC. The project did not recognize this anomaly from the outset. It would have helped if the relative contributions and respective funding amounts had been clarified, and the key academic should have been integrally involved in decisions about the administration of the project.

SUPPORT TO ENHANCE OUTCOMES

One suggestion is that further academic papers could be produced and disseminated from the data that was collected by this project through the Crop Science Department (entomologist). The data collected is useful baseline material from an entomological perspective. However, an implementation phase would not have been appropriate because the project results were inconclusive.

The lesson to be learnt for future projects of this nature:

1) Applied technical research in this project was technology driven rather than needs driven. The project proposal required a critical social and economic perspective before funding, especially in regard to unworkable assumptions.

2) Dissatisfaction with the roles and contributions (financial and other) of the collaborating partners were not clarified in advance of the project.

3) The differential funding of the collaborating institutions caused dissatisfaction.

4) The collaborating institution was not able to ensure accountability existed for the funding.

5) Records were lost.

6) Follow-up on project reports should be instituted as an essential component of the close links between project and project officer. A final payment should be payable after completion of final report.

SUMMARY OF KEY FACTORS

The key factors affecting success of this project were:

1) The project was technology driven rather than needs driven.

2) Assumptions within the project proposal appear not to have been screeened by a social scientist or economist. Evironmental and macro and micro economic factors were not married. The cost of the new improved grain storage granaries was too great for the bulk of communal area dwellers.

3) Lack of clearly defined roles and responsibilities and professional jealousies between collaborating institutions affected the project negatively. Leadership changes within the NGO negatively impacted the project.

4) Project outcomes were enhanced by the collaboarating institution, who gave it legitimacy through project documentation and who was mainly responsible for the substantive reporting on the project findings.

TABLE 6

Grain Storage Project Impact (No.: 85-0286)

Potential Beneficiaries	How Benefit	Mechanism	Actual Extent Benefited	Future Potential Benefit
Communal Area Farmers	• Increased livelihoods	• Post-Harvest Grain Storage	• Low	• Medium
Research Institutions	• Knowledge	• Feeds into current research	• Medium	• High
Institutional Networking	• Capacity Building	• Linkages were not maintained	• Low	• Medium

6. THE GROUNDNUT IMPROVEMENT PHASE III-MOZAMBIQUE (Project No: 87-0038) Project Dates: 1987-1990

6.1 DESCRIPTION OF PROJECT

In recent years, Mozambique has been ravaged by guerrilla warfare and famine. More than 75 percent of the population depend on farming to survive and groundnuts are their main source of edible oil. The Groundnut Improvement Phase III project is the third phase of a project which aimed to improve groundnut quality and yields. The Groundnut Improvement Phase I-III started in 1980 and ended in 1990, during a time when Mozambique was subjected to widespread violence, debilitating supply shortages and purposeful disruption of peasant agriculture by the rebel RENAMO movement. In this context the program started a gene bank of local and exotic groundnut varieties and selected varieties that were well suited to the various Mozambican conditions. Selection of varieties went hand in hand with the on-farm involvement of the researchers, but war disrupted the research. Selected varieties were registered with the seed company for commercial distribution.

At independence in 1975 only one Mozambican agronomist existed in the country and capacity building was therefore a key focus of the project. The impacts and reach of the last phase of the project (1987-1990) cannot easily be understood or differentiated from the broader project. As the last phase of the project provided resources worth half a million Canadian dollars to the Department of Agronomy at the University of Eduardo Mondlane, Maputo, Mozambique, it raises the question of how efficiently, and effectively this money was spent.

CONTEXT

Prior to Independence in 1975, the Portuguese colonial government directed research funds towards improving cash crops such as sugar, cashew and cotton. Groundnuts were a crop of the peasant farmer and were not part of the research agenda. After independence the Portuguese abruptly pulled out of Mozambique without training personnel in agricultural research. Not only were the ranks of the academics empty, but also the technicians and the field workers. The illiteracy rate was ninety-three percent. The Groundnut Improvement Project began training from the bottom up. In the first Phase, farmer's sons (some totally illiterate) were trained in field techniques. The most promising of these, who had been encouraged to up-grade their education, were selected for further training in Phase II. By phase III of the project, the agronomy department was producing 80 graduates a year and many of these had their first field experiences through the Groundnut Improvement Project (R Metcalfe IDRC Reports, Interview with Dean, Faculty of Agronomy and Forestry Engineering).

By 1987, the civil war had forced the researchers to abandon their fieldwork in five provinces and retreat to the security of Maputo. The ending of the war in 1992 affords an opportunity for greater extension, but the departure of trained personnel for further studies overseas is a problem (interview with Dean of Faculty).

OBJECTIVES OF PHASE III

GENERAL OBJECTIVE

To assist small holders by developing improved agronomic practices and varieties that are appropriate to their circumstances and to develop research manpower and institutional capability at different levels to conduct this work. This broader general objective was also the objective of the full project (project summary).

SPECIFIC OBJECTIVES

a) To continue to develop a program of on-farm research on groundnuts with a farming systems perspective and to extend it into important groundnut growing provinces in Southern Mozambique.

b) To further develop and select improved groundnut varieties acceptable to farmers and consumers and adapted to the different agro-ecological regions of the country with adequate yield, yield stability, drought and disease resistance and oil content.

c) To develop improved cultural practices adapted to farmers needs in the important groundnut growing regions of the country.

d) To further develop the institutional capacity of the faculty of agronomy, to conduct vigorous applied research on important agricultural problems in Mozambique and to provide well educated agriculturalists for its own staff and for the agricultural sector in Mozambique.

e) To strengthen the co-ordination of groundnut research and development including seed production between the faculty of agronomy, INIA (the Agricultural Research Institute), SEMOC (The seed company) and the Ministry of Agriculture (project summary).

A key problem in evaluating the extent to which these objectives were achieved was how to differentiate Phase III of the project from the earlier phases of the project. This is because the extent to which the specific objectives of Phase III were met can only be understood in the context of the main achievements of the broader project (interviews at recipient institution, consultants observation). Other problems in evaluating the objectives included lack of available project personnel, lack of contact between IDRC, the faculty and the project personnel, lack of available project file, lack of available Phase III project documents, and the consultants lack of Portuguese language skills.

The general objective (see above) was met by the project as a whole if viewed over the ten year period.

Objective a):
During 1987 to 1990, the war in Mozambique impacted badly on this objective (interview with Dean and Head of Department). The on-farm trials and farming systems analysis have become more of a focus since the end of the war. A Dutch funded program currently exists in the department which focuses on farming systems approaches but there is no direct link to the Groundnut Improvement Project (interview with Dean of Faculty).

Objective b):
The identification, registration and dissemination of two selected seed varieties (RMP11, Bebiano Branco) are associated with this objective, but this result is associated with the entire project not only Phase III (interview with representative from SEMOC, interviews with recipient institution staff)

Objective c):
This is also an objective of the broader project and it was not established how the results of Phase III differed from the earlier project.

Objective d):
Capacity building in Mozambique for seed production, agronomy and faculty teaching was achieved through both the broader project and the last phase (summary report for the Groundnut Improvement Project 1980-1990, interview with Dean of Faculty). It is important to note that at Independence there was only one Mozambican agronomist in the country. By 1987 there were 80 graduates in agronomy from Eduardo Mondlane University and most of these had hands-on experience through the Groundnut Improvement Project

(R Metcalfe IDRC Reports, interview with Dean of Faculty). The project clearly provided for the utilization of methodologies and techniques which could be applied to other crops (Annual reports of the Groundnut Improvement Project,1980,1981-82,83-84,84-85,85-86) By 1997, 63 graduates were expected, the drop in numbers was associated with the disruptive affects of the war on education (interview with Dean). By 1990, at the end of the project and the departure of the expatriate project advisor, one researcher had obtained an MSc, and four others had received technical training in aspects of agronomy (post project summary). By 1997, of the nine advanced academic track students who had worked on the Groundnut Improvement Project at various times, four were studying or had completed their Ph.D.'s. (interview with Dean of Faculty).

Out of the nine students referred to in the summary report, six left the project before the third phase (summary report for the Groundnut Improvement Project 1980-1990). Out of the three remaining students, who were involved during the third phase, two had been collaborating on the project as the entomologist and pathologist. One student, the project leader, went to US to study for his Ph.D in Agronomy. After the departure of the expatriate advisor, the capacity building impact of Phase III of the project largely rested with this individual, who was actively involved in creating and maintaining linkages between institutions, teaching, supervision and research (interviews at Recipient Institution, SEMOC, Ministry of Agriculture, INIA, also see list of documents and thesis supervised in appendix).

From 1980 to 1990, 11 technical staff were trained on the project through the link with ICRISAT or ILCA (summary report and interviews with recipient institution). Of these, two had left before the third phase of the project. Of the remaining nine technical staff, three have since obtained their diploma and continued in the faculty of agronomy and one obtained her BSc, and continues to work in a research capacity for the faculty (interviews at recipient institution).

In summary, the last phase of the project did increase or influence capacity building in Mozambique but when one differentiates the impact of the last phase from the previous phases, this impact is not great. The highlight of the last phase was that it trained one individual to MSc level, which allowed the project to continue after the departure of the project advisor. The continuation of the project after funding was completed was cited as evidence of the success of the project. (email communication with key researcher on the project) The individual is currently absent while he does his Ph.D. in America.

Objective e):
Interviews with personnel from the faculty of agronomy, the INIA, the seed company and the Ministry of Agriculture indicate that the co-ordination of research and development (including seed production) between these organizations did take place during the life of the project and subsequent to it. The departure of the key researcher, to do his Ph.D., has impacted negatively on this co-ordination but it was thought that the co-ordination of the activities would be further enhanced when he returned (interviews with SEMOC, and with Ministry of Agriculture, INIA).

In summary Phase III of the project has rested on the achievements of the earlier years of the project. Neither project documents nor the project file for the period were available from the department of agronomy and though selection of seed varieties was cited as something that had occurred during these years, it was also identified as something that had occurred during previous years (interviews with recipient institution). 1987-1990 were also very bad years in terms of the Mozambican civil war, in which the rebel Renamo movement prevented peasants from conducting agriculture as a means of crippling the state.

STRATEGY

The strategy for meeting the general objective was to train an all Mozambican research team by employing an expatriate project advisor and by providing funding for student training (project summary, R Metcalfe IDRC reports). The strategies used to meet the specific objectives of on-farm trials and improved cultural practices was not identified, and it was stated that war, famine and drought were major hindering factors. On-going groundnut selection took place during 1987-1990, but the lack of a project report for that period meant that specific strategies were not identified. Interviews indicated that war negatively impacted on the project strategies during this period. Research was confined to on-station trials and to on-farm trials closer to Maputo (interviews at recipient institution).

INPUTS

FINANCIAL TABLE 7 (Groundnut Improvement Project Finaces)

Main Budget Line Items (Canadian Dollars)	
Salaries and Allowances (expatriate advisor)	C$185,500
Research Expenses	C$82,500
Consultants	C$15,000
Capital Equipment	C$32,000
Publication	C$18,000
Training	C$103,000
Travel	C$20,000
Contingency	C$45,600
Total Budget	C$501,600
Total Recipient Administered	C$132,500
IDRC contribution	C$501,600
Recipient Contribution	C$37,200
Actual Expenditure (IDRC)	**C$260,211.83**
Actual Expenditure (Recipient)	unknown

(Source: Project Summary)

The project summary indicates that C$271,300 was approved for phase I (36 months), C$522,500 for Phase II (36 months) and C$ 501,600 for Phase III (36 months). Actual payments totalled C$260,211.83 and variance was C$241.388.17.(IDRC finance information) Inputs included salary for an expatriate project advisor, consultants, an international travel budget, funds for training two MSc students, and for sending three students for short courses. It also included salaries and allowances for two full time and part time staff, three technicians, two drivers, as well as casual labourers, field supplies, purchase of vehicle, purchase of two motorcycles, animal traction machinery, audio-visual equipment, fuel, office supplies, vehicle maintenance, publication and contingency payment. By far the greatest inputs were the expatriate's salary and allowances and the training of the MSc student (project summary).

6.2 PROJECT OUTCOMES

OUTPUTS

The identification of seed varieties for replication by the seed company is a major output of the project as a whole (interview with seed company representative, interviews with recipient institution). The creation of linkages between institutions is also an important output in a country that generally lacks capacity. Institutional linkages exist between: the seed company, the Agronomy Department, the Ministry of Agriculture and the Agricultural Research Institute, also a Government Department (interviews with representatives from these institutions). The capacity building at the Agronomy department is the most important output. The training of one researcher, up to MSc level, resulted in him continuing studies for his Ph.D. and in the continuation of the project without external funding. It also resulted in further training of Mozambican students by this individual, thesis supervision and publications (see appendix 4) The budget had funds for training two MSc students but only one student was trained. The technical short course training of four other students replaced this budget item (post project summary). The publications associated with the project are mentioned in the bibliography. Lack of availability of the publications at the Agronomy Department was a problem and it was not clear how the publications were disseminated or made use of.

REACH AND IMPACT

The project planned to reach the small scale farmer, by increasing the research capacity for groundnut improvement. The project, as a whole, has achieved this objective by the commercial production of well adapted seed varieties through the seed company and by the increased capacity and training at the agronomy department (see list of theses supervised by the student trained under this project in appendices).

The extent to which the project has made an impact on small-holder agriculture has not been not been formally assessed by the department, nor by this evaluation. It is known that on-farm trials which had been the focus of the project in its early years were badly disrupted by the war and by drought years (project documents, interviews with recipient institution). Likewise, the extent to which cultural practices have been influenced by the project have not been assessed. Time and language constraints prevented a field trip from being taken. Interviews with faculty personnel indicated that the research capacity for groundnut improvement, provided by the agronomy department, has now reached a critical mass and a national workshop on groundnut is being planned (interview with recipient institution). This is seen as a direct impact of the Groundnut Improvement Project which trained the personnel now working in this field. The end of the war has opened opportunities for extension and for further on-farm trials through the Nampula Research Centre, which was initiated through this project. The recipient institution indicated that 200 farmers were currently involved in on-farm trials and selection of new varieties of groundnuts. Representatives from the seed company and from Government Departments however indicated that the absence of the key researcher in the USA was negatively impacting on the production and availability of seed through the seed company and the linkages created under the project. Project personnel indicated that the fact that the project continued after external funding was withdrawn, and that students continued to be trained in Groundnut agronomy indicated the successful impact of the project.

6.3 ENHANCEMENT OF OUTCOMES

The project would have been enhanced if the war had ended earlier and if Mozambique's transition to democracy had taken place earlier. The project would have also benefitted if more than one key student had emerged as

carrying the project. Almost half of the project funds (C$237,000) were payments made to the project advisor. The impact of the advisor is strongly felt through the publication record in the early years of the project and through the methods and techniques that he introduced (IDRC report). The amount of money paid out in the third phase raises the question whether these funds could not have been used to train further Mozambican students instead.

The Staff in the Agronomy Department indicated that they were overstretched by teaching, administration and consultancy loads (interviews with recipient institution personnel) and therefore found it difficult to find time to respond to the consultancy. The absence of the key researcher in USA meant that the key champion for the project was absent. The institution could enhance outcomes by co-ordinating its response to project evaluations and by enhancing its public relations image in regard to its on-going work. The project does have potential for commercialization through the seed production company. This potential is partially realized but could be enhanced through more active co-ordination between research and seed production activities. This is expected to happen when the key researcher returns from his studies.

The Agronomy Department has computer facilities and could further benefit from ICT's but the availability of Mozambican telephone lines hinders access. This is an infrastructure problem that needs to be resolved before further investment in ICTs.

Future projects need to differentiate the objectives and results of different phases clearly so that adequate evaluation can take place.

SUMMARY OF KEY FACTORS

The key factors affecting success in this project were:

1. The Mozambican civil war, drought and famine.
2. The difficulty in differentiating the success of the three phases of the project.
3. Strong leadership.
4. The use of the project as hands on-training for Mozambican researchers.
5. The linkages maintained between institutions involved in selection and distribution of seed varieties.

TABLE 8

Groundnut Improvement Phase III Project Impact (No.: 87-0038)

Potential Beneficiaries	How Benefit	Mechanism	Actual Extent Benefited	Future Potential Benefit
Agronomy Department	• Capacity Building	• Training researchers & one Msc. student	• High	• High
	• Knowledge	• Development of well adapted seed varieties/Research publications	• High	• High
Small-Scale Farmers	• Increased Livelihoods	• Development of well adapted seed varieties	• Unknown	• High
Other research institutions	• Capacity Building	• Technology developed and distributed	• Medium	• Medium

7. SUMMARY

Table 9

SUMMARY CONCLUSIONS OF PROJECT COMPONENTS

	HINDERS IMPACT	ENHANCES IMPACT
OBJECTIVES:	*Over ambitious, unrealistic objectives *Flawed assumptions *Lack of a critical social science perspective on technical projects	*Clarity, realism, broadening debate
STRATEGIES:	*Lack of applied case-studies and pilot projects, narrowly technical *Lack of participation and consultation *Lack of linkages between interested and affected parties *Multiple competing layers of administrative bureaucracy *Internal administrative conflicts *Poor conditions of service of project personnel	*Case-studies, pilots, broad participatory methodology *Efficient administration— good file records
INPUTS:	*Lack of commited intellectual leadership *Unmotivated institutional context *Lack of contact with IDRC officials *Lack of participatory workshops *Lack of funding for dissemination *Use of project vehicle and per diem *Late arrival of project funds *Unequitable funding for collaborative projects	*Committed leadership *IDRC flexibility *Follow-up funding *Workshops *Dissemination of findings *Use of project vehicle and per diem
OUTPUTS:	*Lack of publications *Lack of publicaitons and networks	*Publications *Linkages with other research *Conceptual framework *Applied Research
REACH:	*No link to policy *No Networking *No link to stakeholder *No linkage between levels *Lack of continuity of project personnel *Departure of key researchers *Lack of supervision *Lack of incentive for research personnel *Slippage in relationship with collaborating institutions *Lack of institutional response *Inconclusive data on new technologies research *Failure to test post-project rate of adoption and effects *Lack of government capacity to promote adoption and sustain project beyond external funding *Ambiguity in roles of collaborating institutions *Personality differences *Inability to differentiate impacts of different phases of projects	*Policy relevant analysis *Networking *Useful Conceptual framework *Impact on improved livelihoods *Involvement of Stake-holders at local, district, national & international levels *Participatory research methodology *Ability to feed into on-going debates *Technologies & methodol gies apply to other users

Table 9 (continued)

SUMMARY CONCLUSIONS OF PROJECT COMPONENTS

	HINDERS IMPACT	ENHANCES IMPACT
IMPACT:	*Lack of individual & institutional capacity building *Lack of quality & quantity of documents *Lack of follow-up on good projects (further research & dissemination) *Structural Adjustment, War, Drought *Civil Service Restructuring *Over bureaucratization *Lack of dissemination of results *Weak leadership (individual & institutional) *"Turf" mentality of gov't depts *Inertia of bureaucracies *Existence of rural elites who co-opt benefits *Conservatism in Political Culture *Lack of applicability of findings to mainstream thinking	*Capacity building at local, government & university level *Strong individual & institutional leadership *Commitment to research clients *Close links between recipient institution & IDRC *Research results are communicable to general public *Applicability of research findings to extension methodologies & debates *Providing a methodological & conceptual model for future management or extension work *Institutional and individual capacity building *Quality and quantity of documents *Dissemination of findings *Receptive & supportive research environment for analysis *Decentralization

Discussion of Summary conclusions which can be made across all of the projects in terms of factors hindering or enhancing impact.

OBJECTIVES

1. Objectives would benefit by being screened by a multi-disciplinary team before funding for any flawed assumptions that hinder project impact.

2. Realistic objectives reflect what actually can be done in the project. For example a research project undertaken by a social scientist should not imply that it can fulfil a highly technical objective (Cattle Management Project?). Likewise, a research project that focuses on mainly technical aspects (e.g., on station trials) should not imply that it will improve communal livelihoods through extension (Pasture Improvement Project and Groundnut Improvement Project) unless a clear and viable mechanism for doing this is set up.

STRATEGIES

1. In the case of projects, dealing with improved technologies, strategies and the methodologies used in the project tended to become an end in themselves. The projects became technology driven. (Grain Storage Project, Pasture Improvement, Groundnut Improvement). Their direct contribution to the broad aim of the project was not clear.

2. Recipient institutions stated that strategies for administering the funding need to be reviewed. This was implicit or explicit in all the projects as transparency was not evident. It was stated that new strategies for ensuring accountability need to be instituted and new institutions for administering funding identified (Trusts, Companies, etc).

INPUTS

1. Inputs were sometimes inappropriate for the institutional context. Eg. salaries funded for institutions which do not allow staff to be paid by funding agencies (Pasture Improvement Project).

2. Project officers enhanced impact by having close links to recipient organizations.

3. Committed academic leadership was a key ingredient for success, as they give projects credibility and reach through publications and networking. Projects which had a turnover of leadership or insufficient leadership tended to falter. Projects which focused on issues of implementation alone were weakened in the long term without the academic leadership.

4. Project vehicles and per diems are prized items and it was stated by one recipient institution that these give individuals an incentive to work on research projects. This can enhance impact but it can also open opportunities for abuse of project funds. The balance is to provide sufficient incentive to individuals, whilst having sufficient mechanisms to monitor use of funding.

5. IDRC flexibility was highly prized by recipient institutions. Broadly this refers to affording the recipient institution sufficient leeway to interpret the project through time in regard to movement of line items, reporting, extensions and other formalities.

6. Where lengthy administrative negotiation takes place over project inputs because of a lack of administrative capacity this hinders the impact of the project.

7. Where institutional collaboration takes place project inputs should be equitable.

8. ICTs are highly useful for impact wherever a functional and computer literate research culture exists in the organization.

9. Where the administrative capacity is weak, project funding can cause conflict.

OUTPUTS

1. Publications from IDRC projects could be enhanced and encouraged through active engagement with research recipient organizations.

2. Networking resulting from projects is a key area where impact was felt.

3. Conceptual, theoretical and methodological models and techniques that emerge from particular projects often have a lasting affect on

institutions and individuals associated with the project. Where these are missing project impact is weakened especially in regard to capacity building.

REACH AND IMPACT

1. The reach of the project was greatly enhanced if the project methodologies included local, provincial, national and recipient institutional activities ie workshops, focus groups, seminars at each of these levels. This requires the key researcher to be both good at research and good at dissemination of the results. In general participatory research had immediate impact (Cattle Management Project).

2. Reach and Impact of the project was often defined by the strength of leadership provided by the key researcher within productive, efficient, ordered work environments and institutional contexts.

3. Poor working and administrative environments and changes in leadership detracted from the impact and reach of the project.

4. Administrative problems detracted from the reach and impact of the project.

5. War, drought and restructuring, bureaucratic fiat impacted negatively on reach and impact.

6. The impact of projects on improved livelihoods and the "public good" was usually indirect and long term. All the projects implied that they would have a direct impact in the project proposal. For example, it was argued that through increasing cattle nutrition, improved livelihoods could be achieved (Pasture Improvement Project), through improving grain storage, cattle management and groundnut improvement, it was argued that improved livelihoods would be achieved. This was not borne out in the project outcomes. Initially, the main beneficiaries of the research were the researchers themselves and their institutions. In the long term, increased capacity building, networking and dissemination of knowledge led to improved livelihoods indirectly.

Summary conclusions in terms of outcomes and impacts in relation to:

IMPACT AREA

Public good outcomes in these projects included capacity building at local governmental and university level, community institution building, conceptual debates that affected policy, linkages and networking which fed into other projects to develop critical thinking for Agricultural and Natural Resource Management Strategies. Adoption of new technologies, tested by the projects, was identified as a slow process and could not be verified in this case-study. Highly technical research generally had less impact on the public good than broader socio-politically conscious research.

Public good outcomes were thwarted by flawed assumptions in the project proposal, administrative problems, drought, war, restructuring of the civil service, unresponsive governmental departments and project leadership changes.

SECTORS

Project proposals all outlined how linkages between technical components (university laboratory research, on-farm trials) and institutional, social and extension components would take place (e.g., the three Zimbabwean projects mention the Farming Systems Unit). This is a crucial aspect in

agricultural and natural resource management projects but was generally lacking in the four projects considered under this case-study.

RECIPIENTS

This case-study indicates that the most productive projects in terms of benefit outputs (knowledge, policy formulation, impact on communities) were housed in universities. A relatively productive project also emerged from an NGO collaborating with a university. The least productive project emerged from a government ministry.

COUNTRIES

Neither Zimbabwe nor Mozambique are ideal research contexts. Mozambique is recovering from decades of civil strife and Zimbabwe is over-bureaucratized and de-motivated by structural adjustment. The motivated individual has to overcome many obstacles to achieve a meaningful research project. The case-study indicates that the motivated individual researcher does overcome the obstacles posed by the country context. Where no such leadership exists the project is likely to falter and the country context becomes a significant factor.

APPENDIX 1

TRAVEL ITINERARY

I. *	Flight Cape-Town to Harare	28.4.97
•	Interviews, documentary & field research	28.4.97 - 11.5.97

While in Harare:

A field trip was undertaken from Harare to Chamatamba Grazing Scheme.

A field trip was taken to Grasslands Research Station in Marondera.

II. *	Flight Harare-Maputo	11.5.97
*	Interviews, documentary & field research	11.5.97 - 18.5.97

III.*	Flight Maputo-Cape Town	18.5.97

APPENDIX 2

LIST OF PEOPLE INTERVIEWED OR CONSULTED

I. **For the Communal Cattle Management Project:**

1) Dr. Calvin Nhira, Director, Centre for Applied Social Science, University of Zimbabwe

2) Prof. Marshall Murphree, Former Director, Centre for Applied Social Science, University of Zimbabwe

3) Mr. Munemo, Deputy Chairman, Chamatamba Grazing Scheme

4) Cashier, Chamatamba Store

5) Gardener, Chamatamba Store

6) Mr. Frank Chinemberi, Chief Animal and Pasture Specialist, Agritex (Government Extension Service)

7) Mr. J. Mupangwa, Senior Pasture Specialist, Agritex

8) Dr. Ben Cousins, School of Government, University of the Western Cape (formerly CASS Research Fellow)

9) Dr. Kay Muir Leresche, Department of Agricultural Economics, University of Zimbabwe

10) Dr. W. N. Madzima, Deputy Director, Veterinary Services Department, Ministry of Agriculture

11) Mr. Bright Mombeshore, Farming Systems Research Unit, Research and Specialist Services

12) Mr. Chikure, Farming Systems Research Unit, Research and Specialist Services

13) Mr. L. Navarro, IDRC Kenya (e-mail consultation)

II. **For the Pasture Improvement Project:**

1) Mr. Manyawu, Head Grasslands Research Station, Department of Research and Specialist Services

2) Ms. Kurarakaraka, Technician for the Pasture Improvement Project, Grassland Research Station

3) Mr. Timothy Machimedzi, Team Leader Marondera District, Agritex

4) Mr. Munemo, Deputy Chairman, Chamatamba Grazing Scheme

5) Mr. Frank Chinemberi, Chief Animal and Pasture Specialist, Agritex (Government Extension Service)

6) Mr. J. Mupangwa, Senior Pasture Specialist, Agritex

7) Prof. Julia Hasler, Biochemistry Department, University of Zimbabwe

8) Mr. Bright Mombeshore, Farming Systems Research Unit, Research and Specialist Services

9) Mr. Chikure, Farming Systems Research Unit, Research and Specialist Services

10) Mr. L. Navarro, IDRC Kenya (e-mail consultation)

III. <u>For the Grain Storage Project</u>:

1) Takawira W. Ndiripo, Programme Manager, Sustainable Natural Resources Management Division, ENDA Zimbabwe

2) Campbell Kagoro, Chief Engineer, ENDA Zimbabwe

3) Prof. D. Giga. Entomologist, Department of Crop and Soil Science, University of Zimbabwe

4) Prof. Julia Hasler, Biochemistry Department, University of Zimbabwe

5) Mr. Charles Gore, Director, ENDA Southern Africa

6) Mr. Tunga Rukuni, Development Technology Centre, University of Zimbabwe

7) Dr. Joe Mushonga, Plant Protection Unit, Research and Specialist Services

8) Dr. Mlambo, Plant Protection Unit, Research and Specialist Services

9) Mr. Mushita, Community Technology Development Trust

10) Mr. Bright Mombeshore, Farming Systems Research Unit, Research and Specialist Services

11) Mr. Ozzie Schmidt, formerly IDRC Canada (e-mail consultation)

IV. <u>For the Groundnut Improvement Project Phase III</u>:

1) Dr. Firmino Mucavele, Dean, Faculty of Agronomy and Forestry Engineering, University Eduardo Mondlane, Mozambique

2) Prof. Mlayi, Plant Production and Plant Protection, Faculty of Agronomy Engineering and Forestry

3) Ms. Carla Honwana, Head, Plant Production and Plant Protection, Faculty of Agronomy Engineering and Forestry

4) Ms. Palmira Vicente, Researcher, Faculty of Agronomy Engineering and Forestry

5) Dr. Luisa Alcantara Santos, Entomologist, Faculty of Agronomy Engineering and Forestry

6) Marcos Freire, student trainee, Faculty of Agronomy Engineering and Forestry (e-mail consultation)

7) Rafael N. Vaiene, Acting Head, Plant Production, Institute Nacional de Investigacao Agronomica (National Agricultural Research Institute), Mozambique

8) Mr. Alphonso, Agronomist, Institute Nacional de Investigacao Agronomica

9) Ms. Italia Souza, Farming Systems Specialist, Institute Nacional de Investigacao Agronomica

10) Agronomist, Ministry of Agriculture

11) Mr. Narcissu Rodriquez, SEMOC (Commercial Seed Company of Mozambique) and also part-time faculty member in the Faculty of Agronomy Engineering and Forestry

APPENDIX 3

LIST OF DOCUMENTS

I. **For the Communal Cattle Management Project:**

A. The Project File

B. The Project Summary

C. The Project Completion Report

D. The Final Technical and Financial Report for the period 5th March 1990 to 4th March 1991

E. The following documents by Dr. Ben Cousins were outcomes from the project:

A Survey of Current Grazing Schemes in the Communal Lands of Zimbabwe, Centre for Applied Social Science, University of Zimbabwe, 1987 (96 pp.).

Evaluation of Pilot Cattle Grazing Schemes, Agritex and the EEC delegation in Zimbabwe, Harare, 1988 (166 pp.).

Community, Class and Grazing Management in the Communal Lands of Zimbabwe in People, Land and Livestock: Proceedings of a Workshop on the Socio-economic Dimensions of Livestock Production in the Communal Lands of Zimbabwe, Centre for Applied Social Sciences and GTZ, Harare 1989 (60 pp.).

"A Participatory Model of Agricultural Research and Extension: The Case of Vleis, Trees and Grazing Schemes in the Dry South of Zimbabwe", (with Ian Scoones) in Zambezia, XVI, 1989, pp. 45-65.

People, Land and Livestock: Proceedings of a Workshop on the Socio-economic Dimensions of Livestock Production in the Communal Lands of Zimbabwe (ed) B. Cousins, Centre for Applied Social Sciences and GTZ, Harare 1989, (460 pp.).

Rusitu Dairy Resettlement Scheme Annual Review for 1989: Sociologists Report British High Commission, Harare, 1989 (45pp)

Livestock Production and Grazing Rights in Communal Lands and Resettlement Schemes in Zimbabwe, Paper presented to World Bank Mission, Agricultural Sector Review, June 1990 (67 pp.).

Property and Power in the Communal Lands of Zimbabwe: Implications for Agrarian Reform. Paper presented to conference on "Land policy in Zimbabwe after Lancaster", University of Zimbabwe, Harare, 13-15 February 1990 (35 pp.).

A Stone Unturned: Local Political Dynamics and the Transfer of Technology in the Communal Lands of Zimbabwe. Proceedings of the Agrotec Regional Workshop on Research, Training and Education in Rural Technology, Harare, March 26-30, 1990.

"Key Resources for Agriculture and Grazing: The Struggle for Control Over Dambo Resources in Zimbabwe" (with Ian Scoones) in, Ian Scoones (ed), Wetlands in Drylands - The Agroecology of Savanna Systems in Africa, London: International Institute for the Environment and Development, 1991 (29 pp.).

"Contesting the Land: Communal Tenure in Zimbabwe: Parts 1 and 2", New Ground, No.'s 6 and 7, Johannesburg, 1991/92 (5 pp.).

Managing Communal Rangelands in Zimbabwe: Experiences and Lessons, Consultancy report for the Commonwealth Secretariat, presented to a workshop on African Rangelands Policy, Matopos, Zimbabwe, January 1992; (133 pp.) published as a Commonwealth Secretariat Publication, Food and Rural Development Division, 1992.

"Social Differentiation in the Communal Lands of Zimbabwe", (with D. Weiner and N. Amin), Review of African Political Economy, 53, 1992 (pp. 5-24).

Room for Dancing On: Collective Decision-Making in Grazing Schemes in Zimbabwe, Centre for Applied Social Sciences, University of Zimbabwe, 1992 (151 pp.).

Institutional Dynamics in Communal Grazing Regimes in Southern Africa, (ed) B. Cousins. Proceedings of a Workshop held at the University of Zimbabwe, Harare, December 1990. Centre for Applied Social Sciences, University of Zimbabwe (222 pp.).

"Debating Communal Tenure in Zimbabwe". Journal of Contemporary African Studies, 12(1), 1993.

A Political Economy Model of Common Property Regimes and the Case of Grazing Schemes in Zimbabwe. ODI Pastoral Development Network paper No. 34b, 1993.

Institutions for Land Redistribution and Management: The Zimbabwean Experience, (with Steven Robins). Proceedings of the Conference on Land Redistribution Options, Land and Agriculture Policy Centre, Johannesburg 12th-15th October 1993, pp. 187-203.

"Zimbabwe's Crisis of Capacity", Cultural Survival Quarterly, 17(2), Summer 1993, pp. 40-41.

"Institutions for Land Redistribution and Management: The Zimbabwean Experience", (with Steve Robins), South African Sociological Review Vol. 6 No2, April 1994, pp 32-55.

"Struggle for Control Over Wetland Resources in Zimbabwe", (with Ian Scoones), Society and Natural Resources, Vol 7, pp. 579-594, 1994.

II. **For the Pasture Improvement Project:**

A. IDRC Makoholi project quarterly report for the period 01/04/92 to 30/06/92

B. Memo to Mr. Fenner from Dr. Tawonezvi, outlining when funds were released 7th September 1990.

C. Memo to Ms. Marida from P.R. Hatendi enquiring about financial information (17th March, 1993).

D. Technical Report of the IDRC Pasture Improvement (Zimbabwe) Project 8/90 (8 pages)

E. Project report 1990/1991 (14 pages)

F. Quarterly Report for the IDRC project (1 January to 31 March, 1992)

G. Project Summary

H. Post Project Summary

I. IDRC financial information

J. Recipient Institution Project File

III. For The Grain Storage Project:

A. Project Summary

B. Post Project Abstract

C. Grain Storage Project Annual Report for the Period 1987 to 1988

D. E-mails from Ozzie Schmidt, IDRC Project Officer

E. Rural Grain Storage in Zimbabwe, Phase I (Project Report)

F. The following are publications/papers resulting from the project:

Van Akker, S. and Giga D. P. (1991) Manual of Grain Post Production Technologies for Small holders in Zimbabwe

Giga, D.P. (1986) Rural Grain Storage in Zimbabwe: Problems, Loss Assessment and Prevention. Zimbabwe: ENDA

Giga, D.P. (1986) "Reducing Crop Losses in Small Farm Storage", Post Production Systems Newsletter (SADCC), 3, pp. 3-14.

Giga, D.P. (1986) "Reducing crop losses and potential areas of improvement in the post-harvest system", Proceedings of a Workshop entitled: Generating a post-production extension Programme for Zimbabwe, pp. 18-24.

Giga, D.P. (1987) Viable Grain Storage for Small-Scale farmers in Zimbabwe. In proceedings of workshop - Cropping in the Semi-Arid areas of Zimbabwe, Harare, August, 572-591.

Giga, D.P. (1987) "Profiting from Pesticides", The Farmer, June 25, 1987.

Giga, D.P., J.A. Biscoe and P.B.S. Chiyoka (1987) Improving on-farm grain storage in Zimbabwe. Development Technology Centre, Technopix 1 (in English, Shona, Ndebele) 1-10pp.

Giga, D.P., E.Tembo, I. Nehumai and L. Matarirano (1988) "Grain Storage in Communal Areas of Zimbabwe: Results from a Survey", The Zimbabwe Science News 22, 40-44.

Giga, D.P. and T. Rukuni (1988) .Post-harvest losses and their prevention: Research Strategies for SADCC. In proceedings of Sadcc workshop Strategy for Integrated Pest Management and weed control in SADCC Countries, (ed) Nampoonya, C 206 pp.

Giga, D.P., S. Mutemerwa, G. Moyo (1988) The assessment and control of losses in small farmers stores in Zimbabwe. Paper presented at First Science Congress, Zimbabwe Science Council, Harare, January, 1988.

Giga, D.P. and J. Biscoes (1989) "Treating maize grain for storage with registered protectants in Zimbabwe: Technical, Practical and Economic considerations", The Zimbabwe Science News, 23, 101-103.

Giga, D.P. and U.M. Mazarura (1990) "Advice to Farmers on Conservation of grains after harvest - The demand for extension staff training and proposals for extension programmes for small-scale farmers", Tropical Science, 30, pp. 85-94.

Katerere, M. and D. Giga Grain Storage Losses in Zimbabwe Occasional, Paper No. 132 ENDA, Dakar (this is a very slightly modified edition of Giga,D. and M. Katerere (1986) Publication).

IV. For The Groundnut Improvement Phase III:

A. Metcalfe, R. (1988) Starting from Scratch - Improving Mozambique's Groundnut Harvest. IDRC Reports.

B. Project Summary

C. The following documents from the Faculty of Agronomy and Forestry Engineering, University Eduardo Mondlane:

Annual Reports of the Groundnut Improvement project 1980, 1981-82, 83-43, 84-85, 85-86 (1987-90 was not available)

Summary Report for the Groundnut Improvement Project, 1980-1990

Programa de Investigacao de variedades, Campanha 1994/95

Relatorio annual de Investigacao 1993-1994

Investigacao realizida na faculdade de agronomia e enggenharia Florestal de 1981 a 1991 e algumas propostas sobre accoes para o seu desenvolvimento Maio 1992.

Programa de Investigacao de Amendoim, Relatorio da Campanha 1994/95 Parte 1, Resultados de alguns ensaios

D. Students Theses undertaken in the Groundnut Improvement Project since 1990:

1) Bruno Arajo, 1990. Efeitos de Tratamentos Fisicos e Quimicos na Desinfeco da Semente de Amendoim.

2) Domingos Dias, 1990. Efeito de Densidade de Plantas na Produo do Amendoim Variedade Bebiano Branco em Regadio.

3) Venancio Machungo, 1990. Comparao de Variedades Promissoras de Amendoim em Condies de Regadio.

4) Julieta Eliseu, 1991. Sistemas de Cultivo Puro e Consociado do Milho (Zea mays L.) e do Amendoim (Arachis hypogaea L.).

5) Rafael Massinga, 1992. Estudo Comparativo de Variedades de Algodo (Gossipium hirsutum L.). Co-supervision.

6) Furede Mudunga, 1993. Efeito da Consociao Milho/Amendoim e da Combinao Varietal no Crescimento, Desenvolvimento e Rendimento do Sistema.

7) Justino Taelane, 1993. Efeito da Adubao Fosfatada no Rendimento do Amendoim (Arachis hypogaea L.) nos Solos das Zonas Verdes - Maputo. Co-supervision.

8) Antnio Bento, 1993. Efeitos do Tratamento Qumico, Mtodo e Taxa de Sementeira na Densidade da Cenoura (Daucus carota L.).

9) Domingos Cugala, 1994. Levantamento da Incidncia de Pragas e Doenas no Milho e Feijo Nhemba do Sector Familiar na Regio de Boane. Co-supervision.

10) Emilio Ussene, 1994. Influncia da Temperatura Durante o Perodo de Armazenamento Sobre o Poder Germinativo da Algumas Sementes.

11) Marcelino Boto, 1994. Seleco de variedades de amendoim (Arachis hypogaea L.) para o Sul de Moambique a partir de ensaios no repetidos, 1980/81 a 1991/92.

12) Estevo Armando, 1994. Determinao duma ptima combinao de densidades de milho (Zea mays L.) e feijo (Phaseolus vulgaris L.). Co-supervision.

13) Joo Albino Bobotela, 1994. Comportamento e rendimento de trs variedades de amendoim (Arachis hypogaea L.) em condies de sequeiro no Baixo Umbelzi. Co-supervision.

14) Albano Tomo, 1994. Influncia da distancia entre linhas no rendimento da cebola.

15) David Borges, 1994. Maneio de variedades fotoperidicas de feijo nhemba (Vigna unguiculata (L.) Walp.) em cultivo consociado com o milho. Co-supervision.

16) Ernesto Ualaia, 1995. Avaliao de perdas causadas pela broca no rendimento do milho (Zea mays L.). Co-supervision.

17) Amrico Humulane, 1994. Efeito da profundidade de sementeira e compactao do solo no rendimento do amendoim.

18) Ablio Ngazero, 1995. Avaliao de perdas causadas por doenas das folhas no amendoim (Arachis hypogaea L.). Co-supervision.

19) Armando Ussivane, 1994. Comportamento e rendimento de trs variedades de amendoim (Arachis hypogaea L.) em condies de regadio no Baixo Umbeluzi. Co-supervision.

E) Some of the work published by the groundnut project (copies of the reports available from from Carla Honwana; the last one may not have been published because of lack of funding):

1) Baquete, E.F., and Freire, M.J., 1987. Present Status and Perspectives of the Aflatoxin Research in Mozambique. In Proceedings of the International Workshop on Aflatoxin Contamination of Groundnut. Held 6-9 October 1987 at ICRISAT-Center, Patancheru, Andhra Pradesh, India.

2) Ramanaiah, K.V., Malithano, A.D., and Freire, M.J. 1987. Effect of Superphosphate Application on the Yield of Groundnut. In Proceedings of the 2nd Regional Groundnut Workshop for Southern Africa. Held 10-14 February 1986, Harare, Zimbabwe.

3) Ramanaiah, K.V., Malithano, A.D., and Freire, M.J. 1987. Groundnut/Maize Intercropping in Mozambique. In Proceedings of the 2nd Regional Groundnut Workshop for Southern Africa. Held 10-14 February 1986, Harare, Zimbabwe.

4) Freire, M.J., 1987. Effects of Staggered Sowing Dates and Plant Proportions in Intercropping Groundnut/Maize. M.Sc. thesis presented at Andhra Pradesh Agricultural University.

5) Ramanaiah, K.V., Freire, M.J., Chilengue, B.S., and Munguambe, A.V. 1989. Research on Groundnuts in Mozambique. In Proceedings of the 3rd Regional Groundnut Workshop for Southern Africa. Held 13-18 Mar 1988 Lilongwe, Malawi.

6) Freire, M.J., and Reddy, S.N., 1989. Effect of relative density of component crops and staggered sowing dates in groundnut/maize intercropping. J. of Res. APAU 17(2): 175-177.

7) Freire, M.J., and Ramanaiah. K.V. 1990. Some Factors Influencing Plant Density and Yield of Groundnut. In Proceedings of the 4th Regional Groundnut Workshop for Southern Africa. Held 19-23 Mar. 1990, Arusha, Tanzania. pp 177-181.

8) Freire, M.J., 1991. Aspects of groundnut protection in Mozambique. In Proceedings of the Second Regional Groundnut Plant Protection Group Tour (Groundnut Regional Program SADCC/ICRISAT), Zimbabwe, Mozambique and Swaziland, 25th February to 1st March 1991.

9) Eliseu, J. M., and Freire, M.J., 1992. Effect of Plant Density and Sowing Pattern on the Yield of a Groundnut/Maize Intercrop. Paper presented at the 5th Regional Groundnut Workshop for Southern Africa. Held 9-12 March 1992, Lilongwe, Malawi.

10) Chiteka, Z.A., Cole, D.L., Freire, M.J., Mamba, Z.I., Mande, H.K., Marais, D.J.M., Mayeux, A., Moima, S.S., Mwenda, F.F., Rao, Y.P., Sibuga, K.P., Syamasonta, M.B., Schmidt, G., Hildebrand, G.L., and Subramanyam, P., 1992. Groundnut Research in the SADCC Region, 1980-1990. In " Nigam, S.N. (ed.) 1992. Groundnut - a global perspective: proceedings of an international workshop, 25-29 Nov. 1991. ICRISAT Center, India.

11) Freire, M.J., and Ramanaiah, K.V., 1994. Optimal Sowing Dates for Groundnut in Southern Mozambique. In "Ndunguru, B., Hildebrand, G.L., and Subrahmanyam, P. 1994. Sustainable groundnut production in southern and eastern Africa: proceedings of the Sixth Regional Groundnut Workshop, Mbabane, Swaziland, 5-8 July 1994. Patancheru 502324, Andhra Pradesh, India: ICRISAT. pp 106-109.

12) Freire, M.J., Raffi, L., and Fernandes, P., 1994. Groundnut in the Farming System: Some Results of a Survey in Northern Mozambique. In "Ndunguru, B., Hildebrand, G.L., and Subrahmanyam, P. 1994. Sustainable groundnut production in southern and eastern Africa: proceedings of the Sixth Regional Groundnut Workshop, Mbabane, Swaziland, 5-8 July 1994. Patancheru 502324, Andhra Pradesh, India: ICRISAT. pp 93-97.

13) Freire, M.J., and Bot=E3o, M., 1994. Selecting Groundnut Varieties for Southern Mozambique. In "Ndunguru, B., Hildebrand, G.L., and Subrahmanyam, P. 1994. Sustainable groundnut production in southern and eastern Africa: proceedings of the Sixth Regional Groundnut Workshop, Mbabane, Swaziland, 5-8 July 1994. Patancheru 502324, Andhra Pradesh, India: ICRISAT. pp 26-31.

14) Sharma, S.B., Smith, D.H., Subrahmanyam, P., Freire, M.J., Faria, T.,

Butler, D.R., e Ranga Rao, G.V., 1994. Parasitism of groundnut by Striga sp. in Mozambique. International Arachis Newsletter 14: 24-25.

15) Freire, M., Boto, M., e Chiconela, T., 1994. 1980/ 1981 a 1992/93: Alguns resultados da investigao de amendoim no Sul de Moambique. Paper presented at the Reunio Nacional de Investigao Agronmica, held 9 August to 2 September 1994, Instituto Nacional de Investigao Agronica, Maputo, Moambique. In "Programa de Investigao de Amendoim: de 1980/81 a 1992/93 alguns resultados da investigao. Edited by Freire, M., Rel 1/9 4, 12 September 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

16) Freire, M., (ed) 1994. Programa de Investigao de Amendoim: de 1980/81 a 1992/93 alguns resultados da investigao. Rel 1/94, 12 September 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

17) Freire, M., (ed) 1994. Programa de Investigao de Amendoim: Relatrio da Campanha 1993/94 e Programao da Campanha 1994/95. Rel 2/94, 11 October 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

18) Freire, M. 1994. Programa de Investigao de Amendoim. Mtodos de Melhoramento de Amendoim. In "Freire, M., (ed) 1994. Programa de Investigao de Amendoim: Relatrio da Campanha 1993/94 e Programao da Campanha 1994/95". Rel 2/94, 11 October 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

19) Freire, M., and Ramanaiah, K.V., 1994. Estudo Preliminar da Aplicao do Sulfato de Zinco e da Combinao de Nitrognior sforo no Rendimento do Amenodim em Nhacoongo. In "Freire, M., (ed) 1994. Programa de Investigao de Amendoim: Relatrio da Campanha 1993/94 e Programao da Campanha 1994/95". Rel 2/94, 11 October 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

20) Freire, M., and Subrahmanyam, P., 1994. On-farm Evaluation of Fungicidal Control of Leaf Diseases on Groundnut in Southern Mozambique. In "Freire, M., (ed) 1994. Programa de Investigao de Amendoim: Relatrio da Campanha 1993/94 e Programao da Campanha 1994/95". Rel 2/94, 11 October 1994. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

21) Freire, M., (ed) 1995. Programa de Investigao de Amendoim: Relatrio da Campanha 1994/95. Parte 1: Resultados de alguns ensaios. Rel 1/95, 16 June 1995. UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

22) Freire, M., 1995. O clima em Maputo na Campanha 1994/95. Baseado no Observatrio do Campus. In "Freire, M., (ed) 1995. Programa de Investigao de Amendoim: Relatrio da Campanha 1994/95. Parte 1: Resultados de algunsensaios. Rel 1/95, 16 June 1995". UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

23) Freire, M., 1995. Avalivo preliminar do efeito da rega por gravida= de e da variedade no rendimento do amendoim no Umbelzi. In "Freire, M., (ed) 1995. Programa de Investigao de Amendoim: Relatrio da Campanha 1994/95. Parte 1: Resultados de alguns ensaios. Rel 1/95, 16 June 1995". UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

24) Freire, M., 1995. Efeito da profundidade de sementeira e da compactao do solo no comportamento e rendimento do amendoim na Provncia de Maputo. In "Freire, M., (ed) 1995. Programa de Investigao de Amendoim: Relatrio da Campanha 1994/95. Parte 1: Resultados de alguns ensaios.

Rel 1/95, 16 June 1995". UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.

25) Freire, M.,, Gilead I. Mlay and K.V. Ramanaiah 1995. "On-farm-trials" na Provncia de Maputo: alguns resultados do periodo de 1982/83 a 1989/90. In "Freire, M., (ed) 1995. Programa de Investigao de Amendoim: Relatrio da Campanha 1994/95. Parte 1: Resultados de alguns ensaios. Rel 1/95, 16 June 1995". UEM-Faculdade de Agronomia e Engenharia Florestal, Maputo, Moambique.