Evaluation of IDRC-Supported Projects at Sokoine University of Agriculture, Tanzania

December 1987
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Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.
EVALUATION OF IDRC-SUPPORTED PROJECTS AT SOKOINE UNIVERSITY OF AGRICULTURE, TANZANIA

Prepared by:

Sokoine University of Agriculture, Morogoro, Tanzania
Mazingira Institute, Nairobi, Kenya
Faculty of Commerce, University of Dar-es-Salaam, Tanzania

With support from:
International Development Research Centre (IDRC)

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IDRC Regional Director R. Bruce Scott, Hon. A.H. Jamal, Chairman of SUA Council, and SUA Vice Chancellor Professor G.R.V. Mmari

Photo: Mazingira Institute
OPENING ADDRESS BY
HON. AMIR H. JAMAL
CHAIRMAN OF COUNCIL
SOKOINE UNIVERSITY OF AGRICULTURE

I am absolutely delighted to be with you, as you have gathered here at the opening of the Evaluation Workshop with the help of the International Development Research Centre of Canada. It is particularly gratifying that the IDRC, which has been our most consistent supporter of research effort in the field of Agriculture and Forestry for the past 13 years, has taken the lead in organizing this most timely workshop and has given material assistance to that end.

I take this opportunity of paying tribute to the fundamental and far-reaching role IDRC has been playing in research activities in the Third World, including in the foundation work of building up research capacity. By any standard, the IDRC is an organization almost unique for its universality, while being wholly supported by Canada's own national resources. That Tanzania should be the third largest beneficiary in Africa of the IDRC is indeed a matter of deep satisfaction. I wish to express Government's profound appreciation to the IDRC for its continuing commitment to the building up of our research capability in the field of Agriculture, Forestry and Livestock Development. Such constant support also means that we, Tanzanians, must be able to demonstrate that the IDRC is justified in continuing to assist us in the crucial field of research capacity building.

But the workshop is much more than exchanging polite and pleasant sentiments. It is not congenial talk that will make research an organic, inseparable part of our total national life. It is deliberate, assiduous, hard-headed, intelligent, cost-conscious endeavour on the part of a deeply committed community of research scientists as well as policy-makers that will produce results of direct practical value to the large numbers of Tanzanians, whose over-riding pre-occupation is how to increase their productivity on a sustained basis.
Research, it is rightly said repeatedly, is time consuming and costs money. Patience is needed just as much on the part of the scientists doing the research, as on the part of the farmers who are eager to benefit from its findings. But research can go on being no more than reams of papers, supported by paper vouchers in the form of travel warrants, apparently aimed at nothing of particular practical value or, when it is devised for a specific objective, there is a placid or even numb delivery system not capable of carrying anything of significance to the farmers and take back to the researchers. Research and development must go hand in hand together, for research to be meaningful.

By all means, let us give credit rightly and properly to those scientists whose efforts have resulted in the development of seeds, both for food crops such as sorghum and rice, or commercial crops such as cotton and cocoa beans. Research work in developing a variety of seeds to suit our conditions will have to be accelerated. However, unless we now make a successful break-through in the application of farm systems in the field as an irreversible process, I am afraid there will remain a communication gap between researchers and the community at large.

No matter how many words may be eloquently used in justification of the expenditure voted in Parliament for research and extension work in agriculture and livestock development, it is what is actually seen and measured by way of increased productivity that will enable us all to buy time for carrying out more intensive and more extensive research, without which tropical Africa cannot hope to come into its own.

I do not wish to oversimplify the nature of the challenging task ahead, and certainly it is not my intention to exonerate policy-makers who do not provide an adequate and coherent framework of priorities. Nor will it help to ignore the overall adverse economic environment presently besetting us. But Parliament has increased its vote for research and extension services to 250m. shillings for the two years 1984 - 1986, not
taking into account the contribution, direct to research projects, by various assisting agencies. We are a poor country. Are we spending these sums prudently? If one adds up what was voted by Parliament for agriculture research and extension services in the past 10 years the tax-payer is entitled to feel more than a little impatient.

I have read with particular interest the technical and management issues which have been formulated by the Sokoine University of Agriculture, the Mazingira Institute of Kenya, and the Faculty of Commerce of the University of Dar-es-Salaam, all actively supported by the International Development Research Centre. It is typical of the IDRC to involve national and regional capability in formulating and assessing the task to be performed in the period ahead, and thus continue to assist in building up our own capability on-the-job, so to speak.

Without wishing to prejudice the discussions in the course of the workshop, let me not conceal my immense relief at the specificity, clarity and absolute relevance of the issues that have been articulated for consideration. I do not know how to say it. But let me try. If the workshop, having addressed itself to these issues, succeeds in laying down very clear tracks, in no ambiguous terms for the task ahead both in the short term and in the medium term, as well as in identifying the agent or agents of specific action in accordance with certain well-argued priorities, I believe this evaluation effort will have been amply rewarded by itself, and could wield a most decisive influence for the rest of this century in the field of agricultural research and its application to the conditions and needs of Tanzania.

I hope, as I have already said, the workshop will recognize achievement wherever it is visible, and perhaps not so visible, and it will indicate the further building blocks to be placed on that achievement. But, it will be most surprising if the workshop did not find that many things are just not right, and that in particular, ad hoc, voluntary, informal coordination has extremely limited horizon or effectiveness. It will
be most surprising if question marks are not raised on the almost total lack of impact on extension services or the expenditure that continues to be incurred every year in respect of these services.

This workshop is a pioneering event. It is not just an evaluation of what the IDRC has or has not achieved in its 13 years of association with the Agricultural College, the Faculty of Agriculture, Forestry and Veterinary Science of the University of Dar-es-Salaam, and now the Sokoine University of Agriculture. It is an evaluation of a whole national system which is at the heart of the matter. The workshop is most timely. Please do not hesitate to say what you feel you must say quite candidly. Please do not hesitate to propose reforms in public organization and in the manner of formulation of public policy if the field of research and extension services is deficient and thus could benefit from recommendations for specific improvement. Please take a few hours or even a day longer than you may have set aside, if necessary, because, I reiterate, the outcome of your evaluation effort may be most decisive, and the incremental value of extra time spent almost measureless.

I particularly urge our own research scientists and institutions to concentrate on our own national needs and priorities, in quite specific terms. We cannot afford generalities, and derive satisfaction in the fact that so much knowledge is now available in the tropical and subtropical part of the Third World. It is how we transplant that knowledge effectively on to our own soil, and how we ourselves add to that knowledge, first for the benefit of our farmers and then for the other developing countries, that will determine our future properly.

For the IDRC, all I have to say is that the very lucid and relevant formulation of the issues which are before this workshop is a most ample justification for its continued support to Tanzania. It is an achievement which stands on its own merit. We Tanzanians cannot say you did not assist us in identifying the issues which we must face. You
have succeeded effectively in doing so. Please help us now to contend with these issues, and to build research and application of research as an organically integral part of the body politic.

Farm systems will never be perfected on pieces of paper. However imperfect and full of flaws, we need to put farm systems in place in the villages of the farming community, and to identify each link in the chain with its respective role. Only then will it be possible to activate that imperfect system by replenishing it, in each critical section, with a measure of knowledge and equipment, thus improving it as we go along and making it more effective each passing season, each year, as long as the researchers feel it in their bones, through actual application of their output in the field, that the farmer believes that he needs it and wants it as his input. How can it be made a focal point on which the researchers and the farmers converge, using the extension services, the specialised institutes and training institutions' network, as their conduit? Is there a case for redirecting and redeploying the expenditure currently being incurred on research and extension services?

These are only some of the institutional and environmental questions to which your evaluation will hopefully assist in finding answers. All that remains for me is to say how very grateful I am to have been given this priceless opportunity to be with you this morning, and to wish the workshop all the success it so richly deserves.

I am very happy to declare the workshop open.

Thank you.

Morogoro, Tanzania
August 20, 1985
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter/Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening address by Hon. Amir H. Jamal</td>
<td>i</td>
</tr>
<tr>
<td>List of Issues</td>
<td>ix</td>
</tr>
<tr>
<td>The Study Team</td>
<td>xi</td>
</tr>
<tr>
<td>Summary</td>
<td>xiii</td>
</tr>
<tr>
<td>CHAPTER ONE</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>CHAPTER TWO</td>
<td>5</td>
</tr>
<tr>
<td>OVERVIEW OF IDRC SUPPORT TO SUA</td>
<td></td>
</tr>
<tr>
<td>CHAPTER THREE</td>
<td>15</td>
</tr>
<tr>
<td>OBJECTIVES &amp; METHOD</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>15</td>
</tr>
<tr>
<td>Technical Evaluation</td>
<td>16</td>
</tr>
<tr>
<td>Management Evaluation</td>
<td>19</td>
</tr>
<tr>
<td>CHAPTER FOUR</td>
<td>23</td>
</tr>
<tr>
<td>EVALUATION RESULTS</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>23</td>
</tr>
<tr>
<td>Research &amp; Teaching Capability</td>
<td>23</td>
</tr>
<tr>
<td>Research Support Services</td>
<td>24</td>
</tr>
<tr>
<td>Tanzanian Government Priorities</td>
<td>25</td>
</tr>
<tr>
<td>Generation &amp; Use of Knowledge &amp; Technologies</td>
<td>27</td>
</tr>
<tr>
<td>Cooperation &amp; Coordination</td>
<td>29</td>
</tr>
</tbody>
</table>
CHAPTER FIVE
WORKSHOP DISCUSSIONS

Introduction 33
Session One : National Agricultural Research Coordination 35
Session Two : Policy & Guidelines at SUA 41
Session Three : Research Management at SUA 45
Session Four : Research Support Services at SUA 51
Session Five : Agricultural Research with Farmers 57
Session Six : Problem-Oriented Research 65

CHAPTER SIX
CONCLUSIONS

Introduction 73
Research & Teaching Capability 73
Research Support Services 74
Tanzanian Government Priorities 75
Generation & Use of Knowledge & Technologies 76
Follow-up to the Evaluation 78

ANNEX ONE : OVERVIEW OF OTHER DONOR SUPPORT TO SUA 81

ANNEX TWO : LIST OF PARTICIPANTS 91

ANNEX THREE : LIST OF DOCUMENTS 95

ANNEX FOUR : LIST OF ABBREVIATIONS AND TANZANIAN TERMS 97
LIST OF TABLES

Table 1  List of projects supported by IDRC at Sokoine University of Agriculture.  4
Table 2  Distribution of grants to SUA by IDRC Division 1972-84.  7
Table 3  Budget allocations as a percentage of IDRC grant.  13

LIST OF FIGURES

Figure 1  IDRC project grants to developing country national institutions, by groups of ten in descending order, showing total grants to each group, and the percentage of the total developing country grants to national institutions (1970-82).  6
Figure 2  IDRC grants to departments at Morogoro 1972-84  8
Figure 3  Technical evaluation method: objectives, questions, projects and data sources.  14
Figure 4  Issues emerging from the overall objectives.  72
### LIST OF ISSUES

#### Technical Evaluation Issues

| T1 | There is a need to improve coordination of the national system of agricultural research making better use of the capacity of SUA within this system. | 36 |
| T2 | There is a need to avoid the dominance of project funding in the research program at SUA. | 42 |
| T3 | There is a need for an improved system of research links to users through extension and other user institutions and for better use of SUA in helping to develop and implement this. | 58 |
| T4 | There is a need to actively promote interdisciplinary and interdepartmental research work at SUA, geared to usable outputs. | 66 |
| T5 | There is a need for a more integrated approach to research and training at SUA. | 67 |
| T6 | There is a need for more research to focus on aspects of production, implementation and dissemination. |  |
| T7 | There is a need for more and better on-farm research incorporating farmers' knowledge. | 59 |
| T8 | There is a need for increasing the availability of inputs and supplies, especially seed, to small farmers. | 60 |
| T9 | There is a need for improved systems of documentation and record-keeping at all levels at SUA. | 52 |
| T10 | There is a need for a proper system of vehicle supervision, use and maintenance at SUA. | 53 |

#### Management Issues

| M1 | National Agricultural Policies | 36 |
| M2 | Policy and Guidelines at SUA | 42 |
| M3 | Research Infrastructure at SUA | 46 |
| M4 | Financial Infrastructure at SUA | 46 |
| M5 | Administration of Research at SUA | 52 |
Carrying out the Farming Systems Research evaluation

Photo: Masingira Institute
THE STUDY TEAM

The evaluation of IDRC supported projects at Sokoine University of Agriculture was carried out from January to August 1985 by two teams, dealing with technical and management aspects, under the overall leadership of the then Deputy Vice Chancellor of Sokoine University of Agriculture, Professor Martin L. Kyomo, assisted by Mr. Stanslaus Shayo. Professor Kyomo and Professor C.L. Keswani prepared the paper on External Assistance to SUA which forms the basis of Annex One.

The technical evaluation team, based at SUA and coordinated by Mr. Stanslaus Shayo of Rural Economy Department was as follows:

<table>
<thead>
<tr>
<th>Case Studies</th>
<th>Evaluators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercropping</td>
<td>Dr. G.I. Mlay &amp; Dr. N. Urio</td>
</tr>
<tr>
<td>Pulses &amp; Groundnuts</td>
<td>Professor A.N. Mphuru</td>
</tr>
<tr>
<td>Dairy Feeding Systems</td>
<td>Mr. N.T.A. Bangu</td>
</tr>
<tr>
<td>Grain Storage</td>
<td>Dr. W.N. Ringo</td>
</tr>
<tr>
<td>Charcoal Stoves</td>
<td>Mr. A.J.P. Tarimo &amp; Professor B.J. Ndunguru</td>
</tr>
<tr>
<td>Sorghum Utilization</td>
<td>Dr. A.L. Doto</td>
</tr>
<tr>
<td>Oilseed Production and Marketing</td>
<td>Professor C.L. Keswani</td>
</tr>
</tbody>
</table>

The technical evaluation team was assisted by two consultants provided by IDRC: Ms. Diana Lee-Smith of Mazingira Institute, and Mr. Getaneh Yemane of Ethiopian Science and Technology Commission, who prepared the Farming Systems case study. Assistance on coordination of the technical evaluation was also provided by Ms. Diana Lee-Smith and the Executive Director of Mazingira Institute in Nairobi, Mr. Davinder Lamba.

The management evaluation team based at the Faculty of Commerce & Management, University of Dar-es-Salaam, was led by Dr. Fratern M. Mboya. He was assisted by Professor Ken Edwards, Mr. K.V. Mgaya and Mr. A. Nnko, all of the Faculty of Commerce and Management.
At the IDRC regional office in Nairobi, the technical and management evaluations were coordinated and actively assisted by the Regional Director, Mr. R. Bruce Scott, and the Regional Comptroller Mr. Pierre Sané, respectively. IDRC's Office of Planning and Evaluation (OPE) in Ottawa participated in the person of Mr. Terry Smutylo, Senior Planning Officer.

The study team would like to thank all those who contributed to this evaluation by offering their time, information and informed comment, including government officials, representatives of parastatal organizations, extension officers, field staff, farmers, SUA staff and students, and not least, the officers of IDRC and other donor organizations. Special thanks to Professor G.R.V. Mmari, the Vice Chancellor of SUA, who took such an interest in the study, and to Professor A.B. Lwoga who took over Professor Kyomo's role when he left in July. Finally, we should like to thank the support staff at SUA, University of Dar-es-Salaam, IDRC and Mazingira Institute, who helped in preparing all the documentation.
SUMMARY

Between January and August 1985 Sokoine University of Agriculture (SUA) and the International Development Research Centre (IDRC) undertook an evaluation of all research projects funded by IDRC at SUA. Both organizations aimed at assessing the role IDRC has played in supporting research which addresses priority development problems, building research capability in the process.

Formerly the Faculty of Agriculture of University of Dar-es-Salaam, SUA was established in 1984 with a mandate to provide practical learning and research useful to farmers. It is anticipated that the evaluation will help SUA to develop a research policy and plan to fulfill this mandate. IDRC views evaluation as a useful management tool which will also help IDRC itself to assess its performance in providing project support to an institution. This in turn will help IDRC to review appropriate ways of strengthening the capacities of research institutions, complementary to project support.

The evaluation consisted of two parts. The technical evaluation was carried out by a team from SUA in collaboration with consultants provided by IDRC, while the management evaluation was carried out by a team from the Faculty of Commerce and Management at University of Dar-es-Salaam. The evaluation findings are contained in the documents listed in Annex Three, whereas this publication only summarizes them and gives the output of the workshop.

IDRC has supported 12 research projects at SUA for a total of two million Canadian dollars between 1972 and 1984. There have been five projects with Crop Science Department, representing 66% of the funding, one each with the Departments of Soil Science, Food Science, and Animal Science, which received 15%, 9% and 5% of the total budget respectively; and two each with Rural Economy Department and the Faculty of Forestry which each received 2½% of the grant funds.
The following main objectives to be measured and assessed were established by SUA and IDRC:  
- building research and teaching capability  
- building research support services  
- meeting Tanzanian Government priorities  
- generation and use of knowledge and technologies  
- adequate cooperation and coordination

The technical evaluation found that IDRC has contributed substantially to the growth of trained manpower at SUA and its capability for carrying out research and teaching at graduate and undergraduate levels. Capacity still needs to be built in interdisciplinary and applied field research and in particular students need to be more involved in this type of work.

There are problems with research support services at SUA according to both the technical and management evaluations, with serious weaknesses in research and financial infrastructure and back up services such as documentation and vehicle maintenance. These need to be addressed through a support staff development plan, appropriate training programs for both researchers and support staff, by establishing the appropriate administrative mechanisms and by enforcing and monitoring correct procedures.

National coordination of agricultural research has been weak for some time and measures being considered by government to establish a single coordinating body were discussed and endorsed by the evaluation workshop. At the moment there is no detailed research plan either nationally or at SUA, so that research projects are formulated according to individual researcher's and donor's perceptions without benefit of a guiding framework. Apart from the national level, SUA needs a research plan at University, Faculty and Department levels that fits within the national plan. The building up of the SUA library as the national agricultural data bank is another important priority.
Although the research has generated knowledge and technologies, there are serious doubts about utilization. Links between researchers and users, between research and extension, and between the university and user organizations, are poor. The research methodology used needs some improvement if research outputs are to have a practical impact in the long run. Particular aspects addressed by the workshop were the need for involving users in defining priorities, setting performance criteria, technology choice and assessment, and the need for carrying out on-farm and production research.

The 53 participants at the Evaluation Workshop included senior representatives of government, the national agricultural and scientific research system and the University of Dar-es-Salaam as well as SUA. The recommendations of this group, which also included the evaluation team and concerned researchers and administrators at SUA, emerged from much lively and self-critical debate and are aimed at enhancing the university's performance within the national research system, and IDRC's effectiveness in supporting development research.

Using This Report

This report can be divided into two parts: the first four chapters relate to the collection of information for the evaluation, and the last two present the results of the Evaluation Workshop.

Chapter 1 provides introductory and background information, and chapter 2 gives an historical overview of IDRC support to research at SUA. The objectives for the evaluation and the method used to carry it out are outlined in chapter 3, while chapter 4 summarizes the findings according to the five objectives of the evaluation, with references to specific projects.

Chapter 5 is a detailed presentation of the issues discussed at the workshop and the recommendations which were agreed upon. The 78 recommendations are grouped according to the sessions in which they were discussed; their presentation follows the workshop format to facilitate use by workshop participants. Chapter 6 takes the information in chapter 4 one step further by synthesizing the workshop recommendations according to the original objectives of the evaluation.
Chapters 1, 2, 3 and 6 are likely to be of more interest to the general reader while those with specific interests within the Tanzanian research community will appreciate the greater detail in chapters 4 and 5. The workshop format and numbering system for the issues and recommendations are retained to facilitate reference to the more detailed evaluation documents used at the workshop (listed in Annex Three).
CHAPTER ONE
INTRODUCTION

On 1st July 1984 the former Faculty of Agriculture, Forestry and Veterinary Science of the University of Dar-es-Salaam, Tanzania, was elevated to the status of a University and was named Sokoine University of Agriculture (SUA). This was a culmination of Tanzania's earlier plans to train high level agricultural manpower, which started with the establishment of the Agriculture College in 1965.

Located on the foothills of the Uluguru Mountains about 200 km West of Dar-es-Salaam and three kilometres from Morogoro Town, the Agricultural College at Morogoro was entrusted with the responsibility of training Tanzanians to Diploma level of education in agriculture while Makerere College in Uganda was to train at degree level for the East African countries, namely Kenya, Tanzania and Uganda. In 1969 the College was elevated to the status of Faculty of Agriculture and a B.Sc. Agriculture was started at Morogoro. In 1973 the B.Sc. Forestry was added, while the Bachelor of Veterinary Science was started in the Faculty in 1976. Thus in 1973, the Faculty at Morogoro was designated as Faculty of Agriculture and Forestry, and in 1976 as Faculty of Agriculture, Forestry and Veterinary Science of the University of Dar-es-Salaam.

At the inauguration of Sokoine University of Agriculture in 1984, the Chancellor, President Nyerere, spoke of its need to be a place of practical learning and research, directly useful to farmers. Instead of only training civil servants, the new University should help in the training of farmers, and providing knowledge which is useful to them. Most people in Tanzania practise mixed farming: cultivation combined with pasture, animal husbandry and tree growth. They need knowledge of all these and their inter-relationships. He urged the new University to take its new mandate seriously by focussing on tools that can be serviced and made in villages and small towns, on farming methods that reduce dependency on rain without increasing dependency
on imported inputs and by respecting the knowledge of the farmer. Students must want to be farmers, to work with farmers and to help farmers. The Chancellor also stressed the need for the University to increase its extension activities, to admit mature students, to improve its library, to build low-cost facilities, and to emphasize efficiency and productivity.

A study team advising SUA on the implementation of the new University Act reported in October 1984 on the need for a strategic academic plan, a campus master plan, and a land-use plan based on soil and water resource assessment. Critical areas identified were the library, and supply and maintenance of equipment. In relation to research, this report mentioned the need to modify courses so that students are familiar with the application of theory to practice, the need for collaborative research with related Ministries, and the need to train a cadre of specialists to link research and extension.

The International Development Research Centre, IDRC, has been one of the major donors of research funds to Morogoro since 1972. During 1984, discussions were held between staff at Morogoro and IDRC on the possibility of evaluating the impact of IDRC support to the institution as a whole, and its wider usefulness.

IDRC's Office of Planning and Evaluation (OPE) in Ottawa understands the role of evaluation as a tool to guide management and decision-making. Although OPE routinely documents and analyses IDRC's activities, emphasis until recently has been on evaluation at project and program level. Now more data is aggregated on a global, divisional or regional basis, with the recipient perspective continuing as an important aspect. This is a first attempt to evaluate the impact of IDRC support on a single national institution, although IDRC supported a parallel evaluation at national level in Ethiopia in 1984, involving a number of institutions. The University at Morogoro has been one of the largest institutional recipients of IDRC project funds in Eastern and Southern Africa.
The concept of such an evaluation was received and considered by the SUA Research and Publications Committee and subsequently approved by Senate in September 1984. Details of a draft proposal were reviewed in joint meetings between IDRC and the Vice Chancellor, Deputy Vice Chancellor and members of the SUA Faculties in November 1984. In addition to reviewing the conduct and utilization of research and the building of research capability, it was expected that the evaluation would review the role of the research at national level, in terms of national development priorities, agricultural extension and institutional relationships.

In order to evaluate the effect and output of IDRC-supported research at SUA, two parallel studies were initiated in early 1985:
- a technical evaluation of the research
- a management evaluation.
These are combined in the present report.

IDRC supported the idea that the evaluation should as far as possible be carried out using local resources in order to increase its usefulness as a management and decision-making tool. Therefore, the technical evaluation was carried out by a team of SUA researchers with assistance from consultants from the region, while the management evaluation was carried out by staff from the University of Dar-es-Salaam Faculty of Commerce. IDRC provided SUA with the consultancy services of Mazingira Institute, a Kenya-based non-profit research organization, and an officer of the Ethiopian Science and Technology Commission, both with some experience in evaluation.

To maximize the usefulness of the evaluation to SUA in developing a research policy and plan in future, the evaluation method focuses on problems and issues identified and some alternative methods of improving performance. These issues formed the agenda of an Evaluation Workshop held at Morogoro in August 1985. It is hoped that these deliberations of concerned personnel at the University and national level will assist SUA to implement its new mandate.
<table>
<thead>
<tr>
<th>PROJECT NO.</th>
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<td>Grain Storage</td>
<td>AFNS</td>
<td>174 300</td>
<td>41 100</td>
<td>1982-1984</td>
</tr>
</tbody>
</table>

**SUB TOTAL: CROP SCIENCE DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>1 342 870</th>
<th>547 490</th>
<th>66.1</th>
</tr>
</thead>
</table>

| 06 3-P-82-0085 | Dairy Feeding Systems | AFNS | 218 800 | 41 000 | 1982-1986 |

**SUB TOTAL: ANIMAL SCIENCE DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>218 800</th>
<th>41 000</th>
<th>66.2</th>
</tr>
</thead>
</table>

| 07 3-P-84-1017 | Agrogeology | Cooperative Programmes | 147 719 | 122 383 | 1984-1986 |

**SUB TOTAL: SOIL SCIENCE DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>147 719</th>
<th>122 383</th>
<th>10.8</th>
</tr>
</thead>
</table>

| 08 3-P-77-0106 | Charcoal Stoves | AFNS | 44 300 | 20 400 | 1979-1981 |
| 09 3-P-82-0063 | Forestry Research Course | Fellowship | 72 250 | NIL | 1982-1983 |

**SUB TOTAL: FORESTRY FACULTY**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>116 550</th>
<th>20 400</th>
<th>5.7</th>
</tr>
</thead>
</table>

| 10 3-P-80-0129 | Sorghum Utilization | AFNS | 109 900 | 74 300 | 1981-1983 |

**SUB TOTAL: FOOD SCIENCE DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>109 900</th>
<th>74 300</th>
<th>9.0</th>
</tr>
</thead>
</table>

| 11 3-P-81-0205 | Oil Seed Production and Marketing | Social Sciences | 16 900 | NIL | 1982-1985 |
| 12 3-P-83-0126 | Rice Production and Marketing | Social Sciences | 78 000 | 21 450 | 1983-1986 |

**SUB TOTAL: RURAL ECONOMY DEPARTMENT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>94 900</th>
<th>21 450</th>
<th>4.7</th>
</tr>
</thead>
</table>

**GRAND TOTAL:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>2 030 739</th>
<th>827 023</th>
<th>100.0</th>
</tr>
</thead>
</table>

**TABLE 1:** LIST OF PROJECTS SUPPORTED BY IDRC AT SOKOINE UNIVERSITY OF AGRICULTURE
CHAPTER TWO
OVERVIEW OF IDRC SUPPORT TO SUA

Over the thirteen years 1972-84, IDRC has supported research and training in the Faculty of Agriculture, Forestry and Veterinary Science at Morogoro, now Sokoine University of Agriculture. The constituent Departments of the Division (now Faculty) of Agriculture are: Crop Science and Production, Animal Science and Production, Food Science and Technology, Soil Science, Agricultural Education and Extension, Rural Economy, and Agricultural Engineering and Land Planning. From 1972 to 1984 IDRC has approved grants totalling CAD $2.031 million for 12 research projects in different Departments in Agriculture and the Faculty of Forestry. Apart from the 12 research project grants, IDRC has supported workshops, training fellowships, study tours, consultancy work and attendance at conferences for researchers based at Morogoro. (Details of the 12 projects are listed in Table 1.)

Figure 1 indicates total IDRC grants to national institutions in the developing countries. The countries are ranked in order of the volume of grants received. Tanzania ranks comparatively high, being fourteenth on the list and third in the African Region, after Senegal and Ethiopia. The Annual Report of the East African Regional Office for 1982 revealed that of a total of 119 projects ever awarded in the region, 80 went to three countries, namely Tanzania, Ethiopia and Kenya. Sokoine University is one of the largest institutional recipients of IDRC funds in the Eastern and Southern African Region.

Of the 12 projects with Sokoine University of Agriculture, eight are run through IDRC's Division of Agriculture, Food and Nutrition Sciences (AFNS). In addition, two have been undertaken through the Division of Social Sciences, one through the Division of Fellowship Programs and one through the Division of Cooperative Programs. Table 2 indicates the distribution of resources by IDRC Division from 1972-84.
Third world countries ranked in descending order of grants, by groups of ten.

**FIGURE 1:** IDRC PROJECT GRANTS TO DEVELOPING COUNTRY NATIONAL INSTITUTIONS, BY GROUPS OF TEN IN DESCENDING ORDER, SHOWING TOTAL GRANTS TO EACH GROUP, AND THE PERCENTAGE OF THE TOTAL DEVELOPING COUNTRY GRANTS TO NATIONAL INSTITUTIONS (1970 – 1982)

Source: Program and Policy Review IV, Office of Planning and Evaluation, IDRC.
<table>
<thead>
<tr>
<th>IDRC Division</th>
<th>Number of Projects</th>
<th>Number %</th>
<th>CAD $ (000)</th>
<th>Number %</th>
<th>Average Grant CAD $</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNS</td>
<td>8</td>
<td>67</td>
<td>1716</td>
<td>84.5</td>
<td>214 483</td>
</tr>
<tr>
<td>Cooperative Program</td>
<td>1</td>
<td>8</td>
<td>148</td>
<td>7.3</td>
<td>147 719</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>2</td>
<td>17</td>
<td>95</td>
<td>4.7</td>
<td>47 450</td>
</tr>
<tr>
<td>Fellowship Program</td>
<td>1</td>
<td>8</td>
<td>72</td>
<td>3.5</td>
<td>72 250</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>100</td>
<td>2 031</td>
<td>100</td>
<td>169 228</td>
</tr>
</tbody>
</table>

**TABLE 2: DISTRIBUTION OF GRANTS TO SUA BY IDRC DIVISION 1972-84**

Table 2 reveals that over the period AFNS grants have dominated the overall pattern of funding to SUA as might be expected. They are also the largest grants, averaging $215 000, while those from other divisions average $89 000 collectively. As shown in Table 2, AFNS research projects constituted 84.5% of the total amount of research grants to SUA, whereas Cooperative Program, Social Sciences and Fellowship Program accounted for 7.3, 4.7 and 3.5% respectively.

Taking each Department separately, the largest amount of IDRC funds (66.1%) was received by the Department of Crop Science for Intercropping, Farming Systems, Pulses and Groundnuts, and Grain Storage research. 10.8% was received by Animal Science and Production Department for Dairy Feeding Systems. 7.3% was received by Soil Science Department for Agrogeology. 5.7% was received by the Faculty of Forestry for research on Charcoal Stoves and for running a Forestry Research Course. Food Science and Technology Department received 5.4% of IDRC funds for research on Sorghum Utilization, while the Department of Rural Economy received 4.7% for research on Rice Production and Marketing and Oilseed Production and Marketing (details are given in Table 1). Several Departments benefitted from the interdisciplinary projects in Crop Science, including Soil Science, Agricultural Engineering and Rural Economy Departments, which received funds for training and staff development, as well as participating in the research.
FIGURE 2: IDRC GRANTS TO DEPARTMENTS AT MOROGORO 1972 – 1984
Figure 2 shows the pattern of IDRC grants to Morogoro in the form of a histogram. The largest IDRC grant was in 1975 for *Intercropping Phase 2*. From 1972-79, all funds were channelled to Crop Science Department through AFNS Division, specifically for the Intercropping research. There was no new funding in the period 1976-79 when there was no regional IDRC office. The pattern of funding 1979-82 shows a steady increase in funding and a much wider diversity between IDRC Divisions and SUA Departments. Funding was low again in 1983-84, but an increase is again projected for 1985 as follow-up Phases of earlier projects are planned to come on line.

IDRC projects at Sokoine University of Agriculture started with Phase 1 of the innovative *Intercropping Project* in 1972. It aimed at producing types of crops better adapted to systematic intercropping systems, to increase the total yields per hectare per year of sorghum, millet and other subsistence cereal grains and grain legumes. The second phase of the project, which continued with almost the same overall objectives under varied farmers ecological conditions, was funded in 1975. The main objective was to provide scope for research in the area of intercropping while strengthening the Department of Crop Science and thus the agricultural research of Tanzania under the training umbrella of the Faculty of Agriculture. The project was completed in May 1978. IDRC acknowledged that the project played a useful role in building research capability although there were no research results useful to farmers.

The first *Charcoal Stoves* project was undertaken by Division of Forestry, University of Dar-es-Salaam in Morogoro in 1979. Its main objective was to introduce more efficient charcoal burning stoves in Africa, in order to provide savings for the individual householder and to reduce the area of forest land required to meet national requirements for charcoal. This project was completed in 1981. The second phase was submitted for funding and strongly endorsed by the Dean of the Faculty and Head of Forestry Division in September 1982. Unfortunately, it did not take off because the principal investigator left for Norway to undertake Ph.D. work and no research assistant was identified to take over the project.
In 1980, Crop Science Department was awarded a grant to undertake work on *Pulses and Groundnuts* in Tanzania. The project will permit the development of adapted varieties of food legumes for various agro-climatic zones in Tanzania. One of the specific objectives of the project is to develop high yielding groundnut varieties with high oil and protein content. The project was due for completion in February 1982, but an extension was granted to 31st July 1985, with Phase 2 starting immediately afterwards.

The first *Farming Systems* project grant was received by the Department of Crop Science and Production in January 1981, with Principal investigators from the Departments of Rural Economy and Crop Science and Production. The objectives of the project are to increase the productivity and welfare of the small farmers in Tanzania by testing the appropriateness of farming systems research methodology with small farmers and to demonstrate the benefits accruing from a farming systems approach. Phase 1 of the project was to be completed in March 1984, but due to delays an extension was granted until August 1985. Meanwhile, Phase 2 of the project has already been submitted to IDRC for consideration and approval.

The Department of Food Science and Technology received a grant in 1981 to work on *Sorghum Utilization* in Tanzania. The project was due for completion in 1983. However, the date of completion was revised twice, to September 1984 and then to December 1985, due to delays in the arrival of the equipment and other administrative problems. The overall objective of the project is to maximize the home and commercial utilization of sorghum flour in Tanzania. There is hope for a subsequent phase of the project to promote the results emanating from Phase 1.

In 1982 the Department of Crop Science and Production received a grant to undertake a study on *Grain Storage* in Tanzania. The main objective of the project is to increase the quantity of maize and sorghum
available to the Tanzanian farmer through the introduction of improved storage structures. The project is documenting and analysing local grain storage conditions in order to more clearly understand advantages of traditional storage methods and potential improvements to traditional storage structures. The project was to be completed in December 1984. But due to delays in arrival of the funds and equipment, implementation did not start until April 1983. Though the project performance has been satisfactory, there were some problems in recruiting suitable field officers and field assistants as envisaged in the project.

Also, in 1982, IDRC made a grant to the Department of Rural Economy to carry out a survey of the Oilseed Production and Marketing in Morogoro Region. The objectives of the project are to identify and investigate those factors that affect the performance of oilseeds production and marketing in Tanzania in order to recommend ways and means of increasing marketed oilseed production and export earnings. The project should be completed in 1985. The progress report on the project has been satisfactory and the Ph.D. thesis write up based on the project is continuing.

A third grant in 1982 was to the Division of Forestry, for a Forestry Research Course in Tanzania under the Fellowships Program of IDRC. The objectives of the project were to carry out training in the Region and familiarize forestry research workers in East Africa with the principles and practice of forest research methods with emphasis on wood production rather than utilization. The project was successfully completed in 1983.

The Department of Animal Science and Production received a grant in 1982 to carry out Dairy Feeding Systems research in Tanzania. The overall objective of the project is to develop improved systems of smallholder dairy farming in the Moshi/Arusha area of Northern
Tanzania. The project is due for completion in 1986. A good progress report on the Diagnostic Survey among Smallholder Dairy Farmers in Hai District has already been submitted by the principal investigators to IDRC.

The Department of Rural Economy received an additional IDRC grant in 1983 for a survey of Rice Production and Marketing in Morogoro, Tanzania. The overall objective of the project is to study agricultural development constraints and opportunities in the Ulanga District of Tanzania and their inter-relationships with population and labour utilization. A progress report has been submitted to IDRC, and the project will be completed in 1986.

The Cooperative Programs Division of IDRC provided a grant in 1984 to the Department of Soil Science in Morogoro, to carry out a research on Agrogeology. The project is being undertaken in collaboration with the University of Guelph, in Canada. The overall objective of the project is to increase the fertility of some types of tropical soils by making use of locally available geological and organic materials. The project is due for completion in 1986.

Sokoine University of Agriculture was launched on the first of July 1984. It is a relatively small Agricultural University where the research capacity is gradually developing. IDRC has made a significant contribution to this development, particularly in the area of training and manpower development. IDRC-supported expenditure 1972-84 was CAD $2.86 million of which CAD $2.03 million (71%) was IDRC grant and CAD $0.83 million (29%) was local contribution. Of the total IDRC support, 22.6% was used for salaries and allowances, 18.2% for training, 17.3% for research expenses, 9% for capital expenditure on vehicles, 7.1% for vehicle operations and maintenance, 5.6% for other capital expenditure, 8.6% for travel, 1.8% for consultants, 1.0% for publications, 0.9% for workshops, and 7.9% for other items including contingency (see Table 3).
<table>
<thead>
<tr>
<th>Section</th>
<th>IDRC Grant Contribution CAD $</th>
<th>As a percentage of IDRC Total Grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and allowances</td>
<td>459 326</td>
<td>22.6</td>
</tr>
<tr>
<td>Training</td>
<td>369 000</td>
<td>18.2</td>
</tr>
<tr>
<td>Research expenses</td>
<td>350 320</td>
<td>17.3</td>
</tr>
<tr>
<td>Capital expenditure (Vehicles)</td>
<td>182 800</td>
<td>9.0</td>
</tr>
<tr>
<td>Capital expenditure (Other)</td>
<td>113 700</td>
<td>5.6</td>
</tr>
<tr>
<td>Vehicle operations and maintenance</td>
<td>144 230</td>
<td>7.1</td>
</tr>
<tr>
<td>Travel</td>
<td>174 073</td>
<td>8.6</td>
</tr>
<tr>
<td>Consultants</td>
<td>37 400</td>
<td>1.8</td>
</tr>
<tr>
<td>Publications</td>
<td>20 730</td>
<td>1.0</td>
</tr>
<tr>
<td>Workshops</td>
<td>19 000</td>
<td>0.9</td>
</tr>
<tr>
<td>Other items including contingency</td>
<td>160 160</td>
<td>7.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2 030 739</td>
<td>100.0</td>
</tr>
</tbody>
</table>

TABLE 3: BUDGET ALLOCATIONS AS A PERCENTAGE OF IDRC GRANT
FIGURE 3: TECHNICAL EVALUATION METHOD: OBJECTIVES, QUESTIONS, PROJECTS AND DATA SOURCES
CHAPTER THREE
OBJECTIVES AND METHOD

General

The overall shared objective of IDRC and SUA was to examine the role IDRC has played in supporting research which addresses priority development problems, building research capability in the process. In the longer term it was anticipated that this will help SUA to develop a research policy and plan, in coordination with agricultural research priorities and other relevant institutions at the national level.

The evaluation consisted of two parts:
. The technical evaluation of research projects
. The management evaluation.

The first was carried out by a team from SUA in collaboration with consultants provided by IDRC. The second was carried out by a team from University of Dar-es-Salaam Faculty of Commerce. The findings of the two studies are summarized in Chapter Four below. In addition, a paper on external assistance to SUA, covering other donor support, was prepared by the office of the Deputy Vice Chancellor and is included as Annex One of this document.

The technical and management studies commenced in January and February 1985 respectively, after joint consultations in January. Data was collected and compiled in draft reports by May. During the month of June 1985, the two studies were reviewed by SUA, IDRC and the consultants, with discussions on the main issues emerging.

The two studies were combined in a background document for the Evaluation Workshop held at Morogoro on 20th-22nd August 1985. The issues set out in Chapter Five provided the agenda for the workshop, which brought together concerned personnel from SUA and the national agriculture research and policy system, as well as IDRC. The list of participants is given in Annex Two.
The 53 participants worked in six sessions of the workshop, each dealing with two or three related issues. The findings of each session were also reviewed in plenary. The discussions and recommendations of the workshop have also been included in Chapter Five of this document, which is organized according to the six session topics. In many cases there were linkages and overlaps between issues and sessions. These have been amended in editing, and a synthesis of the issues is also presented in Chapter Six.

It is hoped this consolidated summary document will be useful to SUA and national level policy-makers in defining how SUA's contribution to agricultural research in Tanzania can be improved and its benefits maximized. This exercise should also be useful to IDRC in formulating future assistance to SUA and similar institutions in the region.

Technical Evaluation

This study reviewed the performance of IDRC-supported research in meeting the objective of addressing priority development problems while building research capacity. Consultations on the specific objectives of the research were held between SUA and IDRC in November 1984 and among the study team at the start of the technical evaluation.

Detailed objectives identified were to assess the impact of IDRC-supported research in:
. Building research capability, contribution to teaching and staff development;
. Strengthening and building research support services at SUA;
. Contributing to the R & D priorities of the Government of Tanzania;
. Generation and utilization of information, knowledge and technology for national development;
. Cooperation and coordination with other research efforts at SUA, and between SUA and other institutions.
The technical evaluation attempted to assess the extent to which research carried out at SUA with IDRC assistance has contributed to meeting these objectives. Two main sources of data were used:

- Interviews with personnel concerned with specific projects
- Secondary data from project files

This material was synthesized into:

- The file search and overview
- Case studies and specific research projects.

The file search was carried out by the SUA coordinator at the IDRC Regional Office in Nairobi in February 1985. The output is in the form of data sheets on each of the 12 projects so far supported by IDRC at Morogoro. The data sheets were included in the Documents Annex to the Report for the Evaluation Workshop.* The information has also been synthesized in Chapter Two of this document, the overview of IDRC support.

During the orientation and review of method at Morogoro in January 1985, the study team identified eight out of the twelve IDRC-supported projects which were suitable for in-depth evaluation. The complete list of projects is given in Table 1 on page 4. The criterion for selection of projects for case study was their stage of completion. Projects insufficiently advanced were not included. Also omitted was the forestry research course which focussed on training and had no research component or output.

The projects selected are indicated in Figure 3 which shows the case study evaluation method in diagramatic form. After selecting the projects, members of the study team were assigned to carry out case studies as indicated in Figure 3. The Farming Systems Project was selected as a pilot case study. This evaluation was carried out January-March by the evaluation consultants, to demonstrate the method to the rest of the team.

* See Annex 3 for list of evaluation documents.
Using the five objectives of research at SUA, evaluation questions probing each objective were developed by the study team. The study team identified the sources of data where answers to the evaluation questions might be found:

- Files
- Project leader
- Researchers
- Policy makers
- Other institutions (including institutions carrying out related research or user institutions)
- Users (including farmers or other target groups for the research results, or user institutions)
- Extension agents, field or village assistants involved in field testing and implementation
- Teachers
- Students
- IDRC

For each case study, the evaluators developed questionnaires for each data source, adapted to project objectives as well as to the overall evaluation questions. The various documents: questions, data sources identified, and questionnaires, were included in the Documents Annex to the Report for the Evaluation Workshop.

Apart from preparing the case studies, the evaluators compiled draft lists of issues emerging from them. These were discussed by the study team at Morogoro in May 1985 and synthesized into a common set of issues by the evaluation consultant and the SUA coordinator. These are technical issues nos. T1-T10 presented in Chapter Five below.
Management Evaluation

This study reviewed the management of research operations at SUA with reference to IDRC-supported projects. The overall objective was to recommend changes or improvements to enhance the efficiency and effectiveness of the institution's research infrastructure and administration, financial infrastructure and accounting procedures.

The detailed objectives which guided the study were to:

. Identify and review those aspects of national agricultural policies, government administration and financial policies and procedures that affect the management of research operations at SUA and other related agricultural research institutions.
. Identify the organizational structure of research management within SUA, and between SUA and other institutions with which it works, in order to achieve its research objectives.
. Review the main organizational, administrative and financial areas affecting research management at SUA.
. Identify the key organizational, administrative and financial issues that constrain or could improve the effectiveness of research programs.
. Provide draft recommendations, for consideration by the Evaluation Workshop, for improved management of research programs and projects at SUA, at government level and in IDRC.

Management is a subject of increasing importance in today's society. It needs even more attention in Tanzania, where cases of mismanagement are creating concern. We hear of cases of misappropriation of public funds, managerial incompetence and negligence, misuse of human resources such as overemployment, accounts in arrears and other related management problems. Probe committees, including Presidential Commissions, have been formed to investigate some of these cases. It has been apparent that the main problem is "poor management". Rather than "post mortem" investigations it is better to arrest such problems by taking stock of operations and management periodically. It is in this spirit that this study was undertaken.
In an organization, management includes the functions of planning, organizing, directing, staffing and controlling activities with the aim of attaining the organization's objectives. These functions were reviewed in relation to the management of research activities at SUA, with specific reference to IDRC-sponsored projects.

In terms of research projects at SUA, the management function of planning involves the identification of the objectives of research and the means of achieving them. The means include strategies, policies and procedures. In short, planning should indicate what is to be done, where, how, when and by whom. Organizing involves developing the appropriate framework that defines and coordinates the activities to be performed in order to achieve research goals. This framework is commonly referred to as an organizational structure. Staffing and directing is a management function that deals with manning the positions provided for by the organizational structure. This includes manpower establishment, training, compensation and other forms of employee motivation. Finally, controlling involves measuring and evaluating the operations to ensure that performance conforms to plans, and that resources employed in the organization are used effectively.

The first part of the management study* reviewed those aspects of national agricultural policies and government administration that affect the management of research activities at SUA and other related agricultural research institutions in Tanzania. The following four sub-sections concentrated on management of research activities at SUA. This included research policy and guidelines at SUA, the research and financial infrastructure in the context of the overall organizational structure of SUA, and the administration of research. Relationships with other agencies were dealt with in the last sub-section which touched on SUA's relationship with donor organizations, the utilization of research findings, and government standing policies and procedures.

* See Annex 3 for list of evaluation documents.
Two methods of data collection were employed:

- Interviews: The relevant personnel in each case were interviewed using questionnaires. These questionnaires are included in the Documents Annex to the workshop report.*
- Secondary Data: Relevant documents were reviewed whenever necessary and when available.

The issues and recommendations identified by the management study team were presented to the workshop and appear as management issues nos. M1-M5 in Chapter Five below.

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* See Annex 3 for list of evaluation documents.
Participants at the Evaluation Workshop

Photo: Mazingira Institute
CHAPTER FOUR
EVALUATION RESULTS

Introduction

This chapter summarizes the findings of the technical and management evaluations. The main achievements and problems are described in relation to the five objectives of SUA and IDRC:

- building research and teaching capability
- building research support services
- meeting Tanzanian Government priorities
- generation and use of knowledge and technologies
- adequate cooperation and coordination.

Information is taken from the eight case studies contained in Chapter 6 of the Report for the Evaluation Workshop and the management study in Chapter 7 of the same report, as well as the file search data contained in the Documents Annex to the Report for the Evaluation Workshop.*

Research and Teaching Capability

IDRC has contributed significantly to the training of research and teaching manpower at SUA. This is probably the most successful area of its support to SUA. Training awards have been taken up for one Ph.D. and 14 M.Sc.s at Canadian Universities, with many recipients carrying out their field work on related projects at Morogoro. In addition, IDRC has supported work for the completion of two other Ph.D.s, one at Morogoro on the Oilseeds Production and Marketing Project, and attendance at numerous related workshops, seminars and short courses in and outside the region. The IDRC-supported research projects have also contributed to the training and skills development of at least 28 B.Sc. students and 12 field assistants. Researchers developed skills in applied field work as well as useful teaching materials on the Intercropping, Pulses

* See Annex 3 for list of evaluation documents.
and Groundnuts Improvement Project (PGIP), Farming Systems Research (FSR), Grain Storage, Charcoal Stoves, Sorghum Utilization, and Oilseeds Production and Marketing projects.

Problems identified during the evaluation were lack of interdepartmental coordination and weakness of interdisciplinary research method. Intercropping, FSR, and to some extent Sorghum Utilization research, created awareness of the importance of on-farm or user-based research work, and brought scientists up against some of the practical constraints to implementation. Dairy Feeding Systems Research (DFSR) seems so far to be developing a more productive field method based on this experience and will no doubt also produce useful teaching materials like the other projects. However, lack of access to the field means that most students are only exposed to the concept and not the practice of on-farm work. The management study revealed that low remuneration levels and a poor service environment were constraints on research capability.

Research Support Services

This is a very weak area of performance according to both the management and technical evaluations, and appears to be seriously hampering all other areas of research and implementation. The management study revealed that many functions at SUA do not operate properly because of the lack of adequately trained and qualified staff. Senate Research and Publications Committee, SRPC, cannot perform the research coordination and management functions assigned to it because its secretariat is untrained and its structure inadequate. There is a weak financial infrastructure with an understaffed Bursar's office, haphazard financial reporting, little monitoring of expenditure, and lack of capacity to carry out clearing and forwarding and internal audit functions. Transport, information and data handling were other areas of significant weakness identified. The library falls far short of its new mandate to act as the national agricultural data bank.
IDRC-supported projects have contributed significantly to the acquisition of scientific equipment, particularly through Intercropping which was the first major research project and helped Crop Science Department to develop its capacity. IDRC has also attempted to address the major constraint of transport through generous grants for vehicles, fuel and spares. But as was stated in the FSR evaluation "transport is the main research support service provided as well as the one with which there are still the most problems." Vehicles and scientific equipment were also provided in PGIP, DFSR, Grain Storage, Charcoal Stoves and Sorghum Utilization projects. The problems identified with transport on most projects were poor maintenance and lack of proper management and supervision of vehicles.

Problems of project management were experienced where more than one department was involved on Intercropping, FSR and Grain Storage research although DFSR was operating satisfactorily with a small interdepartmental field team. Projects mainly handled by one researcher, such as Charcoal Stoves, Sorghum Utilization and Oilseeds Production and Marketing had less management difficulties but the lack of interdisciplinary inputs was sometimes a problem. Management problems lead to infrequent meetings, delays in reporting, poor data handling and sometimes loss of data. Large interdisciplinary teams were found to be not effective.

The need for adequately trained technical and other support staff, better information and data handling systems, were mentioned as problems in almost all cases. It was clear that there was insufficient training of support staff and of research staff in supporting skills, including information, data handling, reporting and communication skills. Not only did SUA not train its support staff adequately, for example the field and village assistants working on FSR, but IDRC has also not supported skills training for researchers or support staff.

**Tanzanian Government Priorities**

The management study revealed that there is no detailed research plan covering the entire agricultural sector in Tanzania. There is also
conflict between the various acts establishing research institutions such as UTAFITI, TALIRO, TARO, Uyole and SUA with respect to their interrelationships. The Tanzanian National Science and Technology Council (UTAFITI) is structurally weak and lacks manpower. The parastatals responsible for agricultural research (TARO) and livestock research (TALIRO) come under the Ministry of Agriculture and Livestock Development (KILIMO) whereas SUA comes under Ministry of National Education. Although there are some informal contacts, the national agricultural research structure is too volatile, fragmented and weak. There is no central organ to coordinate the overall research activities in the country. SUA similarly lacks a detailed research plan either as an institution, or at Faculty and Department levels.

Technical evaluation case studies established similar problems. Although the IDRC-supported research addressed important national priorities, it was felt that there should be a systematic framework within which individual researchers and donors could operate.

Respondents to Intercropping, PGIP, FSR, DFSR and Grain Storage evaluation questionnaires said that food production by small farmers is the main national priority, but several of these and the Charcoal Stoves and Sorghum Utilisation studies showed that the users are not involved in defining research priorities. Almost no respondents felt that users could be involved in technology choice although some stressed the importance of taking traditional knowledge into account.

It was thought by many SUA and national level respondents that SUA personnel have in the past mainly contributed to national development priorities in the field of agricultural research through the provision of trained manpower, and that this is not now sufficient; SUA should have a greater role in formulating, implementing and evaluating national agricultural research policy.
Generation and Use of Knowledge and Technologies

IDRC-supported projects at SUA have resulted in numerous published and unpublished outputs, collections of germplasm and some new varieties of pulses and groundnuts with future potential for release. The *Intercropping* and *FSR* projects also created awareness of these concepts among the research community. However, the technical evaluation also showed that the output of data and publications was not as great as it could have been, while there were shortcomings in technology generation due to lack of user-involvement in problem definition, technology choice and assessment.

The *management study* showed that the national structure does not satisfactorily cater for implementation of research findings. Publications do not reach peasants and are not translated into Kiswahili. Furthermore, donors do not fund implementation and follow-up. These findings were confirmed by the technical case studies, which all contained comments on lack of research/extension linkages nationally and within SUA, and poor connections between research and user organizations in most cases.

The *Intercropping* research produced a number of publications (although papers were of an uneven quality) but failed to produce outputs useful to farmers because no research was carried out under small farm conditions.

The *Pulses and Groundnuts Improvement Project (PGIP)* has so far produced a large germplasm collection, several new varieties of soybeans, green grams and groundnuts, some of which may be recommended for release, and six scientific papers. However, research results ran the risk of not being useful to small farmers because fertilizers were sometimes inappropriately used in experiments.

*Farming Systems Research (FSR)*, produced awareness of the concept and three published papers while several technologies tested with farmers in
the two experimental areas may be adopted by them. However, there was a researcher bias in the choice of experiments and technologies, lack of continuity in the field, poor reporting and some lost data. Farmers were not sufficiently involved in dialogue on decision-making, while extension personnel were not involved at all. The field and village assistants involved were not adequately trained.

*Dairy Feeding Systems Research (DFSR)* had not yet produced result at the time of evaluation but seemed to have a more effective field method incorporating local extension personnel and more dialogue with farmers.

*Grain Storage Research (GSR)* produced some good student reports on traditional storage structures but these are still to be disseminated. Experiments on improved structures had been undertaken but there was lack of integration between the documentation, analysis, design and testing phases, mainly due to poor interdepartmental coordination. Extension personnel were again not included.

*Charcoal Stoves (CS)* research produced three papers and some stove prototypes but the latter have not been disseminated and are faulty due to failure to continue the project and to involve either users or producers in the problem definition, technology design or assessment phases.

*Sorghum Utilisation (SU)* research has produced four papers and a considerable amount of data on chemical composition, sensory evaluation and preparation of different sorghum varieties in composite flours, *ugali* and weaning food. Some awareness of the benefits of dehulling machinery has been created in project experimental areas and several user institutions have shown interest in using project outputs. However, the research suffered from some methodological weaknesses, including lack of user involvement and connections to extension.
Oilseeds Production and Marketing Project has produced a methodology for analysis and three published papers but the recommendations and complete dissertation are still awaited.

In summary, the generation of useful knowledge and technologies, and their actual utilization, are hampered by methodological problems as well as by lack of research support services and poor linkages between departments and institutions.

Cooperation and Coordination

IDRC-supported research has contributed to improving cooperation and coordination between SUA and international research networks and research at other institutions in Tanzania. To some extent, it has also contributed to better interdepartmental research, although cooperation and coordination between many departments and disciplines, in particular between research and extension, has a long way to go. Cooperation and coordination between SUA and user organizations, including the extension services, is weak, with very little connection between research and its application. At national level, the coordination of agricultural research and connections between research and extension are also weak, while SUA's role within the national system is ill-defined.

The Intercropping, FSR and DFSR projects have helped build up cooperation between Crop Science, Rural Economy and Animal Science Departments, but lack of coordination with Agricultural Education and Extension Department was identified on all projects, and between Agricultural Engineering Department and Crop Science Department and Faculty of Forestry respectively on Grain Storage and Charcoal Stoves projects. Methodological weaknesses of interdisciplinary coordination persist even where interdepartmental cooperation has improved, particularly on the link between research and utilization, as evidenced by Intercropping, and FSR. DFSR indicates potential improvement in this area however.
PGIP, Sorghum Utilization, DFSR and Rice Production and Marketing projects have shown some improvements in cooperation and coordination between research going on at SUA and other institutions in Tanzania. At first, such coordination was lacking on PGIP but it became effective as the research proceeded. Coordination of Sorghum Utilization research with other research and user institutions in Tanzania has been active but not always sustained and effective. On other projects coordination with other research and user organizations has been weak, as for example with Intercropping, FSR, Grain Storage and Charcoal Stoves research.

Links to users have been poor on most projects including Intercropping, PGIP, Charcoal Stoves and Sorghum Utilization. Although some useful data was collected from users on Grain Storage, links have not been effective on analysis and design, while users were poorly integrated methodologically where they should have been most involved, on FSR. DFSR may prove to be the exception which hopefully will not prove the rule but establish a new one. This may be possible also with Rice Production and Marketing, and FSR Phase 2.

Coordination with national level policy and planning was weak on most projects, namely Intercropping, FSR, Grain Storage, Charcoal Stoves, and Oilseeds Production and Marketing, but some integration was developed with the national level on PGIP and Sorghum Utilization.

Team coordination and management was satisfactory where the research was limited in scope as with Charcoal Stoves, Sorghum Utilization, and Oilseeds Production and Marketing but generally had problems where more than one department or discipline was involved as with Intercropping, FSR and Grain Storage, or when project management and research were separated as with PGIP. Again, DFSR seems to be the exception, with fewer team management problems so far except those caused by distance to the field.
The management study revealed significant problems of cooperation and coordination between research and management at SUA. Procurement problems caused by poor coordination in SUA, nationally and sometimes with IDRC, were perhaps the most serious, while delays in payment were caused by poor coordination within the Tanzanian banking system, as well as between researchers and the Bursar's office in SUA. Coordination of research, including both financial and substantive monitoring, is generally lacking at SUA.

Finally, respondents to the evaluation at SUA generally felt that cooperation and coordination with IDRC was good. Researchers also thought that such linkages as IDRC has helped to build up with international research networks through workshops, study tours and access to literature have been very positive, although IDRC felt that there is still room for improvement.
Participants at the Evaluation Workshop

Photo: Masingira Institute
CHAPTER FIVE  
WORKSHOP DISCUSSIONS

Introduction

This chapter consists entirely of the output from the Evaluation Workshop held at Morogoro 20th-22nd August 1985. The evaluation case studies and the issues which emerged were presented to the workshop participants who then discussed them and finalized recommendations, based on the alternatives presented and their own deliberations. The issues were grouped for discussion in six working sessions as follows:*  

<table>
<thead>
<tr>
<th>Session one: National Agricultural Research Coordination</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1: national agricultural policies</td>
<td>36</td>
</tr>
<tr>
<td>T1: national coordination of agricultural research</td>
<td>36</td>
</tr>
<tr>
<td>Session two: Policy &amp; Guidelines at SUA</td>
<td>41</td>
</tr>
<tr>
<td>M2: policy and guidelines at SUA</td>
<td>42</td>
</tr>
<tr>
<td>T2: dominance of project funding</td>
<td>42</td>
</tr>
<tr>
<td>Session three: Research Management at SUA</td>
<td>45</td>
</tr>
<tr>
<td>M3: research infrastructure at SUA</td>
<td>46</td>
</tr>
<tr>
<td>M4: financial infrastructure at SUA</td>
<td>46</td>
</tr>
<tr>
<td>Session four: Research Support Services at SUA</td>
<td>51</td>
</tr>
<tr>
<td>M5: administration of research at SUA</td>
<td>52</td>
</tr>
<tr>
<td>T9: documents and records</td>
<td>52</td>
</tr>
<tr>
<td>T10: vehicle use and maintenance</td>
<td>53</td>
</tr>
<tr>
<td>Session five: Agricultural Research with Farmers</td>
<td>57</td>
</tr>
<tr>
<td>T3: research and extension</td>
<td>58</td>
</tr>
<tr>
<td>T7: on-farm research incorporating farmers' knowledge</td>
<td>59</td>
</tr>
<tr>
<td>T8: seed production demonstration</td>
<td>60</td>
</tr>
<tr>
<td>Session six: Problem-Oriented Research</td>
<td>65</td>
</tr>
<tr>
<td>T4: interdisciplinary and interdepartmental work</td>
<td>66</td>
</tr>
<tr>
<td>T5: research and training</td>
<td>67</td>
</tr>
<tr>
<td>T6: production research</td>
<td>68</td>
</tr>
</tbody>
</table>

In the pages that follow in this chapter, the issues are presented as they were discussed and amended in each session. A summary of the discussion is then followed by the recommendations made by the session and endorsed by the workshop in plenary.**

* Issues and recommendations are numbered according to their sources: M issues were raised in the management study, and T issues in the technical study.

** Recommendations are numbered according to the issue under which they were discussed.
Opposite: Smallholdings in the Uluguru Mountains

Photo: IDRC
SESSION ONE
NATIONAL AGRICULTURAL RESEARCH COORDINATION
MANAGEMENT ISSUE NO. M1

NATIONAL AGRICULTURAL POLICIES

Why is it an issue?

There is no national Science and Technology Policy which could provide a framework for sectoral policies including agriculture. This is attributed to the structural weakness of UTAFITI and its lack of manpower, both scientific and administrative. There are also delays in the approval of research projects by UTAFITI. Although there is a national agricultural research policy it is brief and there is no detailed implementation plan setting priorities and realistic targets. Although KILIMO approves the research policies of TARO and TALIRO, SUA operates independently because it falls under the Ministry of National Education. The Acts of Parliament establishing different research institutions contain inconsistencies on coordination because they were drafted at different times. Control is fragmented because of too many research institutions acting autonomously with no central data bank.

TECHNICAL ISSUE NO. T1

THERE IS A NEED TO IMPROVE COORDINATION OF THE NATIONAL SYSTEM OF AGRICULTURAL RESEARCH MAKING BETTER USE OF THE CAPACITY OF SUA WITHIN THIS SYSTEM

Why is it an issue?

All the evaluation case studies reveal serious short-comings in national coordination of agricultural and other research carried out at SUA. Although SUA scientists sit on the seventeen national research coordinating committees, they are not very active members because they fail to attend due to other work, lack of commitment, or not being told of meetings in time. There are no formal links requiring SUA research to be coordinated by the Ministry of Agriculture. Respondents to PGIP, Charcoal Stoves and Sorghum Utilization evaluation said informal links to other research institutions work effectively. However, respondents from outside SUA did not always agree and it was the general consensus that such links are still weak. Transport is perhaps one of the most serious constraints, others being shortage of manpower, frequent changes of personnel, administrative weakness and other demands on professional time, especially teaching. The lack of coordination at national level undoubtedly leads to duplication of effort and inefficiency. The lack of national coordination of FSR was felt to be a significant weakness because of its importance in national agricultural research policy. It was said that there is now almost a critical mass of FSR work at
different institutions in the country that need coordination, and that SUA's new mandate presents a golden opportunity for it to play a more useful role at national level.

Who is affected?

Farmers who need the benefit of the combined efforts of the country's scarce manpower.

Researchers who need to use their talents on work of national importance.

Research institutions including SUA which can benefit from each other's knowledge and resources.

Government which cannot achieve its goals through piecemeal efforts.

Performance Targets

Short Term: Gaps in coordination between research institutions engaged on similar programs should be overcome.

Long Term: A national agricultural research strategy which includes SUA should be put in place so that its manpower is fully utilized.

What has been done so far?

1. Informal links established through PGIP and the National Sorghum Improvement Committee have begun to work well in the absence of formal requirements.

2. Some sectors, for example Forestry, have an adequate national research plan in which SUA personnel are actively involved.

3. The Tanzanian Society for Animal Production, a non-governmental learned society, has operated effectively as a national forum for the last 12 years.

4. Some research projects are already established taking into account all available knowledge on national and regional priorities.
WORKSHOP DISCUSSION ON NATIONAL COORDINATION

Government has already recognized the need for more effective coordination of research at the national level by its proposal for restructuring UTAFITI into a National Commission for Science and Technology. There is a need also to rationalize the excessive number of research institutes in the agricultural sector with no relationship to any national coordinating body. This would counteract the present trend for administrative costs to swallow up scarce resources. An effective agricultural research coordinating body will control the allocation of research funds, and organize regular technical meetings where institutions working on related issues are held accountable. In consultation with relevant institutions and researchers it should establish a set of national research priorities. Professional associations, such as the Tanzanian Society for Animal Production, can fulfill an important role in facilitating exchange of knowledge but cannot be expected to perform coordination functions.

There was a consensus that SUA should play a more important role in the coordination of agricultural research. It is the only one among the country's research and research coordinating organizations which enjoys adequate staffing at a sufficiently high level of training to be able to achieve its stated objectives. The Ministry of Education's position vis-a-vis SUA was explained as administrative, and not one that constrains collaboration with other Ministries on technical matters. The meeting supported the suggestion that SUA contribute to coordination through development of a national agricultural data bank, specifically the dissemination of information between the data bank and all research centres. The results of this workshop should also serve as a useful input into the World Bank consultancy mission to KILIMO on the topic of agricultural research organization. Apparently, an Agricultural Research Council or similar body may be recommended. Discussion revealed, however, that SUA researchers were poorly informed on these initiatives.

Participants believed that SUA researchers do not lack commitment but rather the formal mechanisms for national coordination. Government planning approval is a necessary step. Improved forward planning will be required of SUA and other research institutions to ensure that government approval is obtained in good time for formal requests for donor assistance. Bureaucratic steps should be minimized and good proposals considered promptly. It was noted that not all administrators and researchers are yet aware of the existence of UTAFITI guidelines.

Matters affecting national level also came up during discussions in Sessions 2 and 3 and the pertinent recommendations are included below. Specifically, it was felt that the size of the government allocation of resources to agricultural research does not reflect its importance to national development goals. Session 2 also thought that, pending reorganization at the national level, SUA should be represented in KILIMO's policy committee.
WORKSHOP RECOMMENDATIONS ON NATIONAL COORDINATION

TM1/1 There is a need to review all Acts of Parliament pertaining to research, to identify and overcome legal constraints facing national coordination of agricultural research. Government, in reviewing research coordination, should consider most seriously the need for establishing a body that will be uniquely responsible for coordinating all agricultural research, and which, to be effective, would be empowered to allocate all research funds among implementing institutions, and to which all scientific programs would be accountable.

Action: KILIMO

TM1/2 Government agricultural research institutions, as the primary clients for manpower development by SUA, should encourage, participate in, and contribute to relevant training in research under supervised conditions at research stations for undergraduate and graduate students of SUA.

Action: SUA, KILIMO and related parastatals.

TM1/3 SUA should develop a national agricultural data bank as a service to national coordination of research, and should disseminate the information to researchers everywhere.

Action: SUA, KILIMO, natural resources, agricultural and forestry research institutions, and industry.

TM1/4 Ministries and research institutions should give more priority, in negotiating agreements with donors, to ensuring support for Tanzanian researchers and reduce reliance on expatriate technical assistance.

Action: Manpower Development, Treasury, DEVPLAN.

TM1/5 The Directorate of Research in KILIMO should be requested to include SUA in its permanent research policy committee.

Action: KILIMO, Natural Resources.

TM1/6 SUA's relationship with other research institutions should be more clearly defined, and SUA should pursue all possible means of improving linkages.

Action: SUA, UTAFITI, KILIMO, TIRDO and other related research institutions.

TM1/7 Investigations into delays in the approval of research project proposals need to be carried out at national level, so that ways of speeding up this process can be reviewed.

Action: SUA

TM1/8 Government could review the subvention given to the agricultural sector for research purposes.

Action: SUA, KILIMO, DEVPLAN, ELIMU, FEDHA.
Opposite: Dr. Minjas, Prof. Mshigeni (Chairman of the plenary) and Prof. Kyomo discuss informally during the Evaluation Workshop

Photo: Mazingira Institute
SESSION TWO
POLICY AND GUIDELINES AT SUA
ISSUE NO. M2

POLICY AND GUIDELINES AT SUA

Why is it an issue?
The management evaluation showed that although departments set their priorities these are not documented and are seldom integrated at the faculty and institutional levels. Although there are national agricultural policy guidelines, they are not as comprehensive as they should be. Exchange of information has also not been as efficient as it should be because of poor data banks at the various institutions and lack of a central data bank.

ISSUE NO. T2

THERE IS A NEED TO AVOID THE DOMINANCE OF PROJECT FUNDING IN THE RESEARCH PROGRAM AT SUA

Why is it an issue?
At present on IDRC-supported research projects, the project leaders have control of funds and research direction with very little reporting or overall control within SUA. In an institution with a relatively low budget, this creates internal conflict and management problems, de-emphasizes the role of the institution in controlling its own program, and encourages donor-dependent attitudes. This issue was identified in the FSR evaluation where the lack of a strong overall research program and administrative control on research were attributed to the dominance of donor funding. Overload, with researchers working on too many jobs at once, and lack of proper management procedures were also emphasized. These problems were also identified in the Management Study. The lack of an overall research program within SUA was also identified in the Charcoal Stoves evaluation as contributing to lack of interdepartmental coordination. The PGIP evaluation identified the lack of coordination between research projects in SUA as a problem with regard to supplies and equipment. The Grain Storage evaluation pointed out the lack of a research plan or priorities at national as well as university level. As a result, the choice of most research topics has been left to individual researchers and donors, there is a lack of control and coordination between and within various disciplines, and research results have not been communicated to users.

Who is affected?
Users of research, whose needs may be addressed sporadically, but not in an organized and consistent way.
Researchers who lack guidance and a support structure for their work.
Government and SUA which find themselves led by donors instead of utilizing their support within a planned program.

IDRC and other donors whose technical assistance role, while appreciated, may become too dominant, or even too demanding on the donors.

Performance Target

SUA research projects funded by donors should fit within a clear cut program and set of priorities which systematically address national development priorities.

WORKSHOP DISCUSSION ON POLICY AND GUIDELINES AT SUA

The group agreed that donor programs and procedures tend to predominate. This is because the University does not have its own clearly defined priorities and is not due to any intention to dominate by the donors. SAREC was cited as a donor which provides resources that the recipient can allocate according to its own priorities. IDRC described its own framework for providing support but emphasized that it prefers to respond to recipient programs and priorities rather than defining them. The group agreed that, while SUA has procedures and structures for approving and monitoring research it lacks a research plan. It also lacks a body to prepare such a plan, and a national plan to serve as a guiding framework. A process for establishing departmental and overall plans and priorities was begun in 1978 but never implemented because the document was lost! The establishment of research plans at all levels in SUA was considered a top priority.

Control of research was debated at length with some researchers expressing concern for the preservation of academic freedom and the encouragement of initiative of younger researchers without bureaucratic constraint. However, the overall consensus was that monitoring and supervision are needed as well as a supportive guiding framework. Participants felt that there should be a system of rewarding performance or excellence, and not a routine incentive for carrying out research. Evaluation of performance should be the role of the body concerned with monitoring and supervision. IDRC confirmed that its experience shows no relation between paying people for research and quality of output, although the deteriorating environment and lack of adequate facilities for carrying out research are recognized.
WORKSHOP RECOMMENDATIONS ON POLICY AND GUIDELINES AT SUA

TM2/1 SUA should establish a work plan and set of priorities for the short, medium and long term, taking into account manpower, funds and infrastructure. This should be within the context of a similar national plan (if it exists) and provide a framework for donors to respond to. Research projects should be based on a plan which is designed to meet defined development needs of the country. Plans should be formulated and documented at University, Faculty and Department level, taking into consideration national agricultural policies.

Action: SUA

TM2/2 SUA should establish internal procedures for the control, monitoring and supervision of research projects, based on an appropriate mechanism such as a Directorate of Research.

Action: SUA

TM2/3 SUA should establish clear cut procedures for heads of department, researchers and support staff working on projects, including lines of responsibility, reporting requirements, incentives and remuneration. Incentives should be geared to performance. SUA should establish a mechanism for this which could also be a function of the monitoring body.

Action: SUA

TM2/4 SUA should establish centralized coordination of research supplies and equipment (such as commonly used chemicals, fertilizers, herbicides, insecticides, fuel, spares, sprayers, etc.), and of research support staff such as those dealing with equipment servicing and maintenance.

Action: SUA

Opposite: Sorghum and millet experiments on Intercropping at Morogoro

Photo: IDRC
SESSION THREE
RESEARCH MANAGEMENT AT SUA
ISSUE NO. M 3

RESEARCH INFRASTRUCTURE AT SUA

Why is it an issue?
Research support staff at SUA are often not properly qualified, some technicians are employed on a short-term casual basis, are often assigned tasks inappropriate for their qualifications, and lack transport to the field. The Senate Research and Publications Committee cannot perform all the research coordinating tasks assigned to it because of lack of qualified staff and a proper management structure. Remuneration levels for researchers and administrative staff are low and there is often little incentive to carry out research because of lack of adequate facilities. There are delays in the preparation of progress reports. The research project approval process within SUA differs from that for externally funded projects and internally funded projects are only cursorily supervised by SRPC.

ISSUE NO. M 4

FINANCIAL INFRASTRUCTURE AT SUA

Why is it an issue?
SUA's financial regulations and procedures are similar to those of the University of Dar-es-Salaam and the Government Financial Orders (Parts I and III). They are not specifically designed for SUA and researchers are anyway unfamiliar with them. There is no standard procedure for research project budgetting. Poor financial records (or lack of records) were noted in both the technical and management studies. "Apart from possibly scratch papers and accumulated receipts .... researchers do not maintain any accounting records." This leads to delays and lack of uniformity in the preparation of financial reports. Usually no financial reports are prepared for internally funded projects. Regulations on operating imprest are not followed, and there is no efficient mechanism of monitoring defaulters. Procurement and issuance of supplies is handled by the supplies section of the Bursar's office which is not yet properly established. Problems arising with procurement have caused delays in implementation of several IDRC-supported projects. All financial record keeping is done manually, and SUA does not maintain a separate account for research grants, thus further hindering effective financial control. It is seldom clear whether planned and actual expenditure relate to the point reached in carrying out the research as planned. Because of the shortage of staff in the Bursar's office (as yet there is not even a Bursar) existing staff are overloaded and play too many roles at once. There is an Internal Audit Department which, however, has only one member of staff at present.
During editing of the report, it was found that the recommendations on research management overlapped considerably with those of other sessions. They have therefore been incorporated under the appropriate issue. In reviewing research infrastructure, the workshop strongly advocated the need for an improved staff development and training program for administrative and technical personnel. Development of such a program and support for training from donor agencies was considered a priority. Establishing a Directorate of Research or other research coordinating body in SUA was another major priority. The workshop thought SUA should develop its own internal standards for research procedures that would also meet most donor requirements. A review of procedures in the light of the experience of similar institutions in the region was considered a third priority, while it was also felt that SRPC should assemble a set of guidelines for researchers. However, the suggestion that research technicians, supplies and equipment should be managed by a central pool under a Directorate of Research was not endorsed. It was felt that the detailed functions of a Research Directorate or other body needed further study, but that technicians needed skills which could only be pooled at Department level. Contract terms and transport for support staff and a review of remuneration levels and incentives were also recommended. A minority view was that research should provide its own incentive. It was noted that the Scheme of Service for all cadres within the university has been reviewed and submitted to SCOPO.

The original recommendations of the management study on financial infrastructure were somewhat reduced because most of the constraints identified result from researchers not being familiar with financial regulations. A properly organized supplies section in the Bursar's office was considered the top priority on financial infrastructure. It was thought that there was a serious manpower shortage in the Bursar's office. Although the participants did not feel it was necessary to prepare an accounting manual they recommended a review and update of the financial regulations and financial orientation courses for researchers. Specific measures were recommended for the control of research funds, including improved imprest monitoring and a separate research account, as well as stricter control of financial reporting through the office of the Deputy Vice-Chancellor, who is signatory to project agreements. Computerization of the accounting system was considered a long term goal; basic problems of financial procedures must be solved first. The session also addressed problems with expatriate salaries and delays in obtaining funds through the Tanzanian banking system.
WORKSHOP RECOMMENDATIONS ON RESEARCH MANAGEMENT AT SUA

M3/1 Administrative and technical support staff should be recruited with care and attention. They should be able to benefit from a well-defined career structure, training programs, and being informed of research progress and achievement. Where necessary IDRC and other donors should consider support for appropriate training programs for research support staff.

Action: SUA

M3/2 SUA should study the creation of a Directorate of Research or similar body.

Action: SUA

M3/3 SUA should develop minimum standards for submission, approval and implementation of research projects. These should satisfy its own and most funding agency requirements.

Action: SUA

M3/4 SUA should review the experience of other institutions in the region which have overcome difficulties in research management through introduction of effective procedures and controls. SUA should seek donor assistance for educational visits in this respect.

Action: SUA, donors

M3/5 The general research guidelines of SUA should be assembled by SRPC and made available to researchers.

Action: SUA

M3/6 Reasons for delays in the preparation and submission of progress reports should be looked at. Monitoring the progress of research projects could minimize some of the problems that lead to such delays.

Action: SUA

M3/7 Short term technical support staff should be employed on contract terms, or employed as a pool of research technicians who are trained and available within the departments.

Action: SUA

M3/8 The problem of transport for field staff should be addressed through improved management procedures, coordination of transport facilities and improved collaboration between researchers and departments.

Action: SUA

M3/9 SUA should develop a policy for incentives for all research work including externally funded projects.

Action: SUA

M3/10 SUA should request the Government to review its remuneration scales and constraints on alternative incentives with a view to:

a) Improving the quality of Tanzanian agricultural research
b) Adequately staffing the Bursar's office
c) Adequately staffing the library.

Action: SUA
M4/1 The supplies section of the Bursar's office should be re-organized and equipped with competent manpower. Procedures on procurement and issuance of supplies should be documented to avoid misappropriations and losses. Assistance in manpower training should be sought from IDRC and other donors.
Action: SUA, donor agencies.

M4/2 SUA should review its current financial regulations to reflect reality as well as the activities of SUA.
Action: SUA

M4/3 SUA should conduct orientation courses for researchers on budget formulation and accounting procedures.
Action: SUA

M4/4 SUA should continue with the effort of recruiting the appropriate trained manpower to fill the vacant accounting posts including the recruitment of a Bursar. Existing staff should also be trained as necessary.
Action: SUA

M4/5 SUA should review its system of issuing research imprests in one installment where not necessary. Different installments could be one way of controlling research funds.
Action: SUA

M4/6 The Deputy Vice-Chancellor should require that financial reports be prepared for all funds approved. This should include analysis of planned versus actual expenditures in relation to actual stage of completion.
Action: SUA

M4/7 SUA should carry out a feasibility study for computerizing the research funds accounting system.
Action: SUA

M4/8 SUA should open a separate bank account for grants to enhance control of research funds.
Action: SUA

M4/9 SUA could continue looking for a solution on how expatriates' salaries can be remitted overseas.
Action: SUA

M4/10 The Bursar's office should continue its efforts to ensure that funds remitted through NBC in Morogoro from external donors are processed by the bank in a reasonable time.
Action: SUA
"Transport is the main support service provided and the one with which there are still the most problems". Above: the original Intercropping Vehicle provided by IDRC has run its course. Below: the Sorghum Utilization Vehicle is still going strong.

Opposite: At the Security Guards Station, SUA

Photos: Masingira Institute
SESSION FOUR
RESEARCH SUPPORT SERVICES AT SUA
ISSUE NO. M 5

ADMINISTRATION OF RESEARCH AT SUA

Why is it an issue?
There is no formal mechanism for designating a project leader and there have been problems of getting information when project leaders are absent. Project assets usually become the property of the institution when the research work is complete but there is a problem with interdepartmental assets, which may therefore not be properly looked after. Furthermore, administrative departments do not acquire equipment in the process. There have also been delays and mistakes in the procurement of equipment because of lack of clear specifications from researchers, as well as due to lengthy customs procedures and delay in setting up SUA's clearing and forwarding procedures. (See Issue No. M4.)

ISSUE NO. T 9

THERE IS A NEED FOR IMPROVED SYSTEMS OF DOCUMENTATION AND RECORD-KEEPING AT ALL LEVELS AT SUA

Why is it an issue?
SUA has been designated as the National Agricultural Library under its new mandate, and institutions are directed to deposit documents there for national reference. The evaluation shows that the library lacks foreign exchange to purchase new reference material, and researchers prefer to keep useful documents in departmental libraries. Research project reports were found to be sometimes late or inadequate in some of the evaluations and there were cases of incomplete and lost data (PGIP, FSR). This is not limited to SUA, for poor record keeping was also observed in national level research (Sorghum Utilization Project).

Who is affected?
Researchers who are working in an environment of confusion which can lead to results of doubtful accuracy.

SUA which needs to fulfill its mandate of providing an adequate national documentation service and to manage research efficiently.

Government which needs reliable and up-to-date scientific information.

Performance Targets
Adequate procedures, guidelines and equipment for substantive research record keeping at SUA; adequate staffing, training, equipment and other resources at SUA library.
ISSUE NO. T10

THERE IS A NEED FOR A PROPER SYSTEM OF VEHICLE SUPERVISION, USE AND MAINTENANCE AT SUA

Why is it an issue?

Vehicle maintenance is a widespread problem in Tanzania because of lack of foreign exchange and spare parts. IDRC has assisted SUA in the provision of both vehicles and spare parts, and this assistance has been instrumental in helping SUA develop its field research capability. Nevertheless, it is the area of research support services still most fraught with problems. This is shown particularly in the Farming Systems, Pulses and Groundnuts and Sorghum Utilization reports. Driver training and supervision and management of the maintenance workshop appear to be major problems. Vehicle parts get lost or stolen while repairs take long and may be ineffective. Some researchers go so far as to get their vehicles serviced outside SUA. Some researchers are themselves unfamiliar with good vehicle care and maintenance. It is not clear that the garage personnel are adequately trained for the task or receive supervision from personnel competent to do so. Lack of spare parts or inept repairs may mean vehicles lie idle for long periods of time.

Who is affected?

Researchers who cannot maintain contact with research on farmers fields because of lack of transport.

IDRC which may be wasting resources on vehicles and parts which are not being properly looked after.

Government because national research coordination is severely hampered by lack of transport.

Performance Targets

Short Term: Establish procedures for vehicle supervision and time allocation, driver training and supervision, workshop management.

Medium Term: Vehicles to be maintained in service for minimum five years without interruptions of more than a few days at a time.

What has been done so far?

1. IDRC has included generous budget allowance in some projects for maintenance and spare parts and provides assistance in obtaining parts through the regional office.

2. Individual researchers have developed good informal collaboration on sharing of vehicle time and trips for field research.
WORKSHOP DISCUSSION ON RESEARCH SUPPORT SERVICES

Several of the topics discussed under research administration have been included in Session 3 during editing. The group discussed the administration of project assets, particularly interdepartmental assets, and the appointment of project leaders. It was felt that the current practice of the project leader being the originator of the research idea was correct, but that there should be a better way of administering handover to others when need arises.

Participants thought a proposal for upgrading the library to serve as the national agricultural data bank was a matter of utmost priority. At present SUA has a problem with putting its own records in a form suitable for library use and the group recommended enforcement of guidelines on research record keeping and depositing reports with the library. Students' special project reports in particular were mentioned as valuable documents, but often these disappear into Departments and are usually not even typed. The issue of departmental libraries was hotly debated and the group was unable to formulate any recommendation. It was however generally agreed that library management is good and cataloguing up-to-date, comparing favourably with the situation two years or so previously.

It was generally agreed that vehicles and transport have long been a thorny issue at SUA. There are regulations governing vehicle use and maintenance but these are not being implemented. However, some steps have already been taken to re-organize the workshop and recruit qualified management staff. The recommendations were endorsed as presented and it was agreed that similar types of improvement were needed with respect to other types of scientific equipment used in research at SUA. In particular, it would be useful if SUA standardized equipment such as vehicles to simplify procurement and replacement of parts. The workshop was informed that IDRC does not have preferences on equipment and responds to recipient requirements.
WORKSHOP RECOMMENDATIONS ON RESEARCH SUPPORT SERVICES

M5/1 Project assets should be administered by project leaders as at present but responsible departments should also monitor them.
Action: SUA

M5/2 Donors should require project assets to remain University property at the end of projects. Division of assets at the end of interdepartmental projects should be decided by SRPC at the start of such projects.
Action: SUA, donor agencies

M5/3 When requesting IDRC and other donors to procure assets on their behalf, researchers should provide sufficiently detailed information.
Action: SUA, donors

M5/4 SUA should have a clear procedure for appointing successors to project leaders who leave, and for appropriate handing over.
Action: SUA

T9/1 SUA should prepare a proposal for adequately staffing and equipping the library as a national data bank, as a basis for seeking funds.
Action: SUA, donors

T9/2 SUA should enforce proper research record keeping. Assistance should be sought for financing the typing of student research reports.
Action: SUA, donors

T9/3 The library should be adequately staffed with sufficient trained manpower, including training of existing staff where necessary.
Action: SUA, donors

T10/1 SUA should continue its efforts to improve efficiency in the vehicle maintenance workshop. This should include:
  a) Hiring procedures
  b) Driver and mechanic training
  c) Inventory and stock control procedures
  d) Shop management and supervision
  e) Procurement of supplies.
Action: SUA

T10/2 SUA should enforce procedures on vehicle use, supervision and accountability, including vehicles used on interdepartmental projects.
Action: SUA

T10/3 SUA should introduce vehicle care and maintenance orientation for researchers and assistants so that they can assist in driver supervision.
Action: SUA

T10/4 These recommendations on vehicles should also be applied as appropriate to other scientific equipment used at SUA.
Action: SUA

T10/5 SUA should have standard specifications for procurement, spares and maintenance.
Action: SUA
Opposite: Farming Systems research plot at Tandae, Uluguru mountains

Photo: Masingira Institute
SESSION FIVE
AGRICULTURAL RESEARCH WITH FARMERS
ISSUE NO. T 3

THERE IS A NEED FOR AN IMPROVED SYSTEM OF RESEARCH LINKS TO USERS THROUGH EXTENSION AND OTHER USER INSTITUTIONS AND FOR BETTER USE OF SUA IN HELPING TO DEVELOP AND IMPLEMENT THIS

Why is it an issue?
During the evaluation, it was variously stated that SUA's links to user institutions are non-existent while those between research and user institutions at national level are correspondingly weak, and that there is a missing link between research and extension. The national system of extension has been through a number of changes since independence. Decentralization in 1972 is widely acknowledged to have been ineffective. The Task Force Report of October 1982 recommended the placing of a single, vertically integrated, extension service under KILIMO. However, research/extension linkages are still weak. TARO is a parastatal while extension is in KILIMO. Research results are not translated into extension packages and many respondents were unclear as to how this process does, or should, operate. The same is true with SUA where links between the Department of Agricultural Education and Extension and other departments are ineffective.

Who is affected?
Farmers who have no access to research findings, and no opportunity to communicate their needs and priorities to researchers.
Extension workers who lack appropriate packages for dissemination, resources such as transport and training, and opportunities to help identify and disseminate farmers' priorities.
Researchers who have inadequate information on research priority needs and feedback on research utilization.
Government because there is lack of impact of research on production levels.

Performance Targets
Short Term: Increased flow of information between farmers and researchers; increased training and information for extension workers; and, increased integration between research and extension in SUA training courses.
Long Term: More viable and effective farm technologies and a corresponding increase in farmers' production levels.

What has been done so far?
1. Although SUA has been experimenting with researcher/farmer links through FSR, this has only included extension in the DFSR project.
2. FSR incorporating farmers, researchers and extension personnel is being tried in various locations under the national umbrella, with USAID and Nordic funding, and training provided by the CIMMYT regional office.
ISSUE NO. T 7

THERE IS A NEED FOR MORE AND BETTER ON-FARM RESEARCH INCORPORATING FARMERS’ KNOWLEDGE

Why is it an issue?

The Intercropping Project did not produce usable results because there was no research on farmers’ fields or under farmers’ conditions. The PGIP ran the risk of producing results not useful to farmers by using artificial fertilizers. Even FSR has been testing crop-specific technologies proposed by individual scientists and using farmers mainly as sources of land and labour. Evaluation surveys showed that, with a few exceptions, most scientists, students, teachers and extension personnel do not consider farmers’ knowledge important except in providing baseline information. Technologies are presumed to originate from research sources. Some, but not all, members of the Grain Storage team realized the importance of traditional technologies and traditional knowledge. A major fault of the aborted Charcoal Stoves Project was the failure to properly survey the conditions under which the technological solution was supposed to perform, or to consult users. Similar attitudes affected the Sorghum Utilization Research. If SUA is to fulfill its mandate and produce usable research results, research must include the farmer as a more active participant. Research needs to be carried out under farmers’ conditions. Traditional and local knowledge needs to be respected and utilized by researchers.

Who is affected?

Farmers who need improved technologies that will increase their production given existing conditions and resource constraints.

Researchers who need an improved field research method, and access to traditional knowledge if they are to produce useful outputs.

Government which needs an effective way of implementing its policy to improve the productivity and standard of living of the small farmer.

Performance Targets

Short Term: Awareness among more students and researchers of how to document and utilize traditional knowledge; adoption of farmers’ conditions as target criteria for the design of technologies (including crop breeding); and, more active participation of farmers in research through researcher/farmer dialogue.

Long Term: Research results which are usable by farmers and others.

What has been done so far?

1. DFSR works more pragmatically with farmers and combines animal and crop investigations.

2. Some techniques developed in FSR Project have shown increased productivity of specific crops and could be adopted by farmers.

3. There is some awareness of the complexities of on-farm research through FSR and of the value of traditional knowledge through GSP.
ISSUE NO. T 8

THERE IS A NEED FOR INCREASING THE AVAILABILITY OF INPUTS AND SUPPLIES, ESPECIALLY SEED, TO SMALL FARMERS

Why is it an issue?
One of the major constraints to production by small farmers is lack of inputs, especially seed. There is a shortage of quality certified seed in Tanzania and standards have had to be relaxed to increase quantity. Even so, the quantity does not come near meeting demand. Farmers are used to keeping their own seed but even local seed has been in short supply because of drought. Farmers in FSR project areas have been requesting more seed of the varieties tested, but so far it is not available. The official source of supply is TANSEED, which is in turn supplied by contract growers, many of which are unreliable. The Morogoro Wami Magole Cooperative Society functions well as a source of farm inputs, including seed, for surrounding villages. However, there are others which do not function well. Many contract suppliers which produce foundation seed lack spares and capital. There is a need for SUA, through its contacts with farmers through FSR and its proximity to TOSCA and the National Seed Testing Laboratory, to pilot a system for improved bulking and distribution of seed.

Who is affected?
Farmers who need adequate supplies of seed and other inputs.
Researchers who need to adapt their method to encompass pilot demonstration of seed production and distribution, and supply of other inputs.
SUA which needs to develop adequate capability for bulk seed production including demand assessment, production, production supervision, storage and distribution.
Government which needs to upgrade the seed supply system nationally.

Performance Targets
Short Term: A pilot demonstration of an economically viable seed bulking and distribution system; a similar system for the supply and distribution of other farm inputs.
Long Term: Adequate supplies of seed to small farmers; better distribution of affordable inputs to small farmers.

What has been done so far?
1. The new agricultural policy of Tanzanian Government indicates that Farmers Associations or Cooperative Unions should be strengthened as farm input (including seed) distribution points for villages.
2. KILIMO is reviewing the national system of seed production and distribution through Cooperatives, TFA's and farms.
3. The PGIP at SUA plans to bulk and distribute seed to farmers.
4. The University produces seed on its farm under contract to TANSEED.
WORKSHOP DISCUSSION ON AGRICULTURAL RESEARCH WITH FARMERS

When dealing with the issue of research/extension linkage, participants endorsed the idea of domain-specific research, that is, research aimed at, and developed with, a specific target group so that the results are applicable to prevailing environmental and socio-economic conditions. Once the results are out the farmers can adopt them immediately. Although decentralization of extension has not been effective in the past, the workshop felt this was due to resource constraints and lack of effective links to research, and a decentralized research/extension system was endorsed. It was thought this should be piloted at SUA. However, the shortcomings of SUA's own internal links between research and extension must first be addressed, as current links between the Department of Agricultural Education and Extension and others are extremely weak. The issue of women extension workers was the subject of heated debate and many objections were voiced but consensus was eventually reached that women must be systematically employed in extension. The group deleted a recommendation that user institutions should be included in national research coordination committees, and substituted a recommendation for a separate national coordinating committee for extension under the national agricultural research council. However, a proviso that these two systems of national coordination should not be divorced was introduced during the plenary meeting. Better links between SUA and user institutions were also thought necessary.

The group supported the recommendations relating to on-farm research and user participation in research. It was agreed that scientists and farmers do interact to some extent at present, but not on the issue of technology choice. It was pointed out that "telling them" is not interaction and that traditional and local knowledge are needed for research. However, it was agreed that the performance criteria for crop and animal improvement programs should not be blindly accepted farmers' objectives but the result of a dialogue between scientists and farmers. During the plenary session the importance of extension in FSR was also stressed. "Researcher/farmer/extension agent" interaction should be the rule, as it is in DFSR and national research, and not "researcher/farmer" as it has been in FSR.

The workshop strongly endorsed the idea of pilot demonstration seed production and distribution being done at SUA, pointing out that such a system must be economically viable for small farmers. The need for similar approaches to the supply of other farm inputs was stressed, although seed had clearly emerged as a priority during the evaluation. The plenary session concurred that piloting a farm management and input supply system was something that concerned SUA in general and not just the FSR project, even though it had emerged as an issue through FSR work.
WORKSHOP RECOMMENDATIONS ON AGRICULTURAL RESEARCH WITH FARMERS

T3/1 Domain specific research should be conducted and disseminated in collaboration with farmers and extension personnel on a decentralized basis. Such decentralized research should be centrally monitored and disseminated across the national system.
Action: SUA

T3/2 Information systems should be set up at such decentralized research/extension stations.
Action: SUA

T3/3 There should be a periodic evaluation of such extension and dissemination to ascertain its effectiveness.
Action: SUA/KILIMO/MALIASILI

T3/4 In order that it can pilot such an approach, SUA should first develop better integration of research with its Agricultural Education and Extension Department and Centre for Continuing Education.
Action: SUA

T3/5 SUA undergraduate courses should continue to include field extension training, and field research trials.
Action: SUA

T3/6 Women students and women extension workers should be systematically included in the research extension system, so as to reach women farmers more effectively.
Action: SUA/KILIMO/ELIMU/MALIASILI

T3/7 SUA should give due weight to the production by researchers of extension materials as well as academic publications.
Action: SUA

T3/8 SUA should hold orientation workshops and regular briefings on its research plans and progress of research projects for users and user institutions.
Action: SUA/KILIMO and other related institutions.

T3/9 It is recommended that there be established a national coordinating committee for extension, which should not be divorced from the national agricultural research coordinating system.
Action: SUA/KILIMO/MALIASILI

T7/1 FSR method should be refined to:
   a) Explain project objectives before entry into the community
   b) Identify small farmer priorities before formulating experiments
   c) Include documentation and consideration of existing technologies (varieties, cultural practices, others as applicable) and socio-economic information
   d) Base decisions (including technology specification and choice) on direct interaction between scientists and farmers and including extension personnel
   e) Include livestock and tree crops rather than focussing only on cropping systems (for example, dairy/traction combinations)
   f) Include extension personnel on a routine basis.
Action: SUA/TARO and other relevant research institutions.
T7/2 FSR management should be improved by:
a) Having a smaller interdisciplinary team fully involved in field work and including agricultural extension and education personnel
b) Providing adequate training for field personnel and involving them in decision making
c) Regular meetings in the field involving farmers, and at SUA, to plan timetable and related resource requirements.

Action: SUA/TARO and other relevant research institutions.

T7/3 Crop and Animal Improvement Programs should be improved by:
a) Proper documentation of existing varieties or breeds, husbandry practices and environmental conditions
b) Using farmer/scientist agreed objectives as performance criteria for breeding
c) Simulating on-farm conditions for selection among genotypes
d) Carrying out on-farm tests with farmers in the relevant environmental conditions.

Action: SUA/TARO/TALIRO and other relevant research institutions.

T7/4 Other research involving technological innovation should be improved by:
a) Proper documentation of existing conditions of use
b) Accepting users' stated needs as performance criteria for technology design
c) Frequent dialogue with users during technology development on constraints to adoption and use
d) Proper monitoring of defined performance criteria during on-site user testing.

Action: SUA and other relevant research institutions.

T8/1 SUA should plan and implement a pilot demonstration project for small scale local seed bulking. This should include training, advice and other back up support in collaboration with TOSCA and the National Seed Testing Laboratory. It should also be done in consultation with KILIMO, which could use the experience gained for replication on a wider scale. Focal points for seed bulking could be:
a) Selected small scale farmers in a locality on contract to TANSEED under the supervision of SUA/TOSCA.
b) Cooperatives on contract to TANSEED supervised by SUA.

Action: SUA

T8/2 FSR method should be expanded to incorporate a farm management aspect involving forward planning of input demands, production, distribution and monitoring, including a range of inputs in addition to seed.

Action: SUA
Opposite: Grain Storage research at SUA

Photo: Masingira Institute
SESSION SIX

PROBLEM-ORIENTED RESEARCH
66

ISSUE NO. T4

THERE IS A NEED TO ACTIVELY PROMOTE INTERDISCIPLINARY AND INTERDEPARTMENTAL RESEARCH WORK AT SUA, GEARED TO USABLE OUTPUTS

Why is it an issue?
Failure to implement a genuine interdisciplinary research method has been a problem voiced by IDRC as far back as the Intercropping project and by SUA researchers themselves in current work. Even in FSR, which is clearly interdisciplinary in structure, it is identified as a major problem by researchers. One aspect of this is the differences in method between disciplines. It makes it difficult for scientists to collaborate because they do not understand each others' implicit assumptions. It was also clearly expressed that scientists have difficulties with decision-making and technology choice and design. Another aspect is administrative collaboration between departments. There are no clear-cut procedures for researchers to collaborate with research based in another department, and there are sometimes conflicts over ownership of and access to resources. (Ref. Grain Storage, Charcoal Stoves, FSR.) The present academic reward system is geared to published outputs largely within disciplinary boundaries. On the other hand, SUA's mandate to produce results useful in application has no corresponding incentive structure. The demands of teaching within departments also take priority over other activities which are interdisciplinary and might have more applied output.

Who is affected?
Users because research outputs appear in a form which is not immediately useful to them.
SUA because it makes it difficult to carry out its mandate.
Government because its goal of promoting the productivity of the small farmer is not met.

Performance Targets
Short Term: Introduce organizational structures and incentives which promote applied interdisciplinary work.
Long Term: Outputs of research in the form of extension information.

What has been done so far?
1. Some collaborative sharing of work and resources across departments based on goodwill.
2. Some on-the-job learning of joint decision-making in the field by scientists from Animal Science, Rural Economy and Crop Science, working on FSR and DFSR.
3. The Sorghum Utilization and Charcoal Stoves projects have created some awareness in Food Science and Wood Utilization Departments respectively, of the nature of applied work.
ISSUE NO. T 5

THERE IS A NEED FOR A MORE INTEGRATED APPROACH TO RESEARCH AND TRAINING AT SUA

Why is it an issue?
The primary role of SUA in the past has been in the training of manpower. Morogoro has produced staff for the national agricultural research system, and senior level agricultural policy and extension staff. Its new mandate requires that it also produces productive farmers, and people who want to work with and help farmers. Graduates are needed who have a practical orientation and sufficient field experience. There is also a need to maximize the usefulness of trainee manpower available at SUA for research for national development. Opportunities for deploying students on SUA or national level research which will have implementable results need to be maximized. In turn, there is a need for research projects to provide, or be integrated with, planned training components that build up the necessary skills in researchers, technicians and other research support staff. At present, the demands of teaching take precedence over research work, and support services are not geared to research work. Training components of research projects also focus heavily on acquisition on M.Sc. degrees, not all of which are integrated with locally applied research. Neither SUA nor IDRC have devoted sufficient resources to training of support staff.

Who is affected?
Farmers who need guidance, support and usable research results.
Other research institutions which need to produce effective outputs.
Government which needs to deploy scarce trained manpower productively.
Students who need worthwhile and productive careers.
IDRC and other donors who need to fund and help SUA develop training programs for technicians and other research support staff.
SUA which needs to develop in-house training programs for research support staff.

Performance Targets
Short Term: To expose students to more applied field work.
Long Term: To increase the volume of implementable research results.

What has been done so far?
1. Students have worked in the field on FSR, DFSR and PGIP.
2. IDRC has provided training support for AFNS research grants, and emphasis on project related field-work has increased in recent years.
3. Researchers and students have carried out numerous applied studies, many documented in this evaluation.
4. A proposal for M.Sc. scholarships for TARO staff, tenable at SUA, has been included in PGIP Phase 2.
ISSUE NO. T 6

THERE IS A NEED FOR MORE RESEARCH AT SUA TO FOCUS ON ASPECTS OF PRODUCTION, IMPLEMENTATION AND DISSEMINATION

Why is it an issue?
Research results may remain on the shelf if researchers do not get involved in the process by which the research output is subsequently produced, disseminated and put into use. The research results themselves may be inapplicable if they are not tested on all necessary aspects through to implementation. SUA, IDRC and other donors need to foster research which addresses well-defined user needs and a well-defined production process. Research should not stop until it is clear that the output works in the setting it was designed for. The Charcoal Stoves evaluation shows that, apart from user needs, the process of production and dissemination was not well thought out either before or during the research. Producers, (as well as users) should have been involved from the start. The neglect of production and dissemination aspects can also be a characteristic of many other types of research, including crop and livestock research, where extension has an important role to play. Sorghum Utilization research touches on village production as well as use of dehulling machinery while Grain Storage research must include storage structures that can be afforded and made by farmers as well as ones which work.

Who is affected?
Users who are not able to benefit from incomplete research.
Researchers who need to "get their hands dirty".
SUA which needs a plan for research implementation as well as research.
IDRC and other donors who need to encourage and consider support for research on production and dissemination.

Performance Targets
Medium Term: Research projects at SUA to be carried out in the context of a research priority implementation plan; IDRC and other donors to support appropriate production, pilot demonstration and dissemination research within SUA's priority plan.

Long Term: Research outputs which are implemented.

What has been done so far?
1. Sorghum dehullers will be tested in village locations and future local machine production is anticipated, although production research parameters are not yet defined.
2. Local artisans were included in Charcoal Stoves project.
3. Studies of traditional grain stores have been carried out, but are not yet linked to design improvements and production.
4. DFSR is testing methods of distributing fodder.
5. FSR and PGIP plan to experiment with seed bulking and distribution.
WORKSHOP DISCUSSION ON PROBLEM ORIENTED RESEARCH

The issue of interdepartmental and interdisciplinary work divided participants on how this should be approached. The consensus reached was to omit all reference to specific interdepartmental structures and the group concurred in the end that the top priority was promotion of interdisciplinary work and an investigation by SUA into ways of administering interdepartmental research. The next most important priority was considered to be the carrying through of research to extension package form and communication in Kiswahili. The group did not address methodological issues of interdisciplinary work as such, but recommended that project management should be tightened up to increase effectiveness in the field. The group was again greatly divided on the issue of incentives for applied research. Although some scientists felt that usable outputs should be rewarded, others felt that much research is essential even if it cannot be applied. The recommendation to reward scientists for usable outputs as well as other research was finally adopted with a strong minority objection. Other recommendations of the evaluation to encourage interdisciplinary skills training and field work were endorsed.

The issue of research and training followed on logically with more specific recommendations on the appropriate skills training. Participants felt that the major constraint on student field work is lack of resources. Therefore the top priority should be to seek donor support for transporting students to the field and providing materials for producing extension information. Specific SUA programs and donor support for training of researchers, support and field staff were also recommended.

The issue of applied research on production, implementation and dissemination was also endorsed without any of the concerns that had been expressed earlier about interdisciplinary applied work. It was felt that research findings must be properly followed up. In some cases this involves a level of capital investment and testing of production processes. The workshop felt that donors should be willing to support such research, as well as communication programs, in order for the results to be useful and successfully applied.
WORKSHOP RECOMMENDATIONS ON PROBLEM ORIENTED RESEARCH

T4/1 SUA should take measures to promote interdisciplinary research, including investigating different ways of administering interdepartmental projects.

Action: SUA

T4/2 SUA should take measures to encourage research to be carried through to extension package form.

Action: SUA

T4/3 SUA should communicate relevant research findings in Kiswahili to educate the masses.

Action: SUA

T4/4 Project management should be tightened up and reflect proper forward planning of time, assignments, outputs, required field inputs and their delivery.

Action: SUA

T4/5 SUA should work out a system for motivating and rewarding scientists for good research, including usable outputs.

Action: SUA

T4/6 Students should be involved in interdisciplinary field work.

Action: SUA

T4/7 Researchers should attend workshops and training courses on decision-making, technology choice and R & D methods.

Action: SUA

T4/8 The Department of Agricultural Education and Extension should work jointly on research projects with other departments in addition to its own projects.

Action: SUA

T5/1 SUA should request IDRC and other donor support to facilitate field practicals. The resources needed are transport and materials for the production of extension information.

Action: SUA, IDRC and other donors.

T5/2 SUA should develop appropriate short training programs for support staff, including field and village assistants, technicians, library, secretarial and administrative staff on aspects of research work relevant to their tasks.

Action: SUA

T5/3 IDRC and other donors should consider providing advice and support to SUA on funding in-house training courses for research support staff.

Action: SUA, IDRC and other donors

T5/4 IDRC and other donors should consider providing advice and financial support for appropriate research technician and support staff training courses outside SUA and of various durations.

Action: SUA, IDRC and other donors
T5/5 IDRC and other donors should consider providing advice and support to SUA on appropriate training courses on back up skills required for research implementation (e.g. applied statistics, data analysis, use of computers, R & D skills, report writing, budget planning, and other aspects of research management).

Action: SUA, IDRC and other donors

T5/6 SUA should consider introducing short orientation or credit courses on similar aspects of research management for students.

Action: SUA

T6/1 SUA should develop a research implementation plan inclusive of priorities for research on production and dissemination.

Action: SUA

T6/2 SUA should develop its capability for production research in selected priority areas, including user needs, technology of production, socio-economic feasibility, pilot production, monitoring and evaluation.

Action: SUA

T6/3 IDRC and other donors should consider financing of pilot production units where these are considered essential to research implementation.

Action: SUA, IDRC and other donors

T6/4 SUA should develop its capability for dissemination of research findings through communications research, inclusion of communications components in research projects, and/or integration of extension personnel in research.

Action: SUA

T6/5 IDRC and other donors should consider funding communication/extension research in selected priority areas, or communication/extension components of some research projects.

Action: SUA, IDRC and other donors
FIGURE 4: ISSUES EMERGING FROM THE OVERALL OBJECTIVES
CHAPTER SIX
CONCLUSIONS

Introduction

The synthesis of the recommendations is given here, by grouping them according to four of the objectives established at the beginning of the evaluation:

- building research and teaching capability
- building research support services
- meeting Tanzanian Government priorities
- generation and use of knowledge and technologies

The objective of cooperation and coordination has been subsumed under the others as there was a great deal of overlap, particularly concerning coordination at the national level. This output is shown in diagramatic form in Figure 4 opposite.

Research and Teaching Capability

Research projects funded by IDRC have contributed greatly to the development of skilled manpower at SUA and to its capacity for carrying out research and teaching at graduate and undergraduate levels. However, the technical evaluation identified some methodological weaknesses in interdisciplinary and applied research, affecting both the quality of research and the training of students. This was addressed by technical issues T4 on interdisciplinary and interdepartmental work and T5 on research and training.

The workshop considered that the two most important priorities in these areas were to:

- encourage interdisciplinary work and investigate different ways of managing interdepartmental projects
- seek assistance for involving students in more practical field work by providing them with transport and materials for producing extension information.
Session six, where these items were discussed, also made recommendations on ways of going about training researchers in applied and inter-disciplinary research methods, training support staff in areas of research related to their work and ways of getting researchers to produce results which can be disseminated through the extension services.

**Research Support Services**

The lack of research support services, infrastructure and trained manpower was an area of considerable weakness identified by the evaluation. Research support staff lack training and skills and researchers lack training in some important supporting skills. Also lacking are basic equipment, supplies and management infrastructure. Research support services formed the bulk of the issues raised by the management evaluation as issues M3 on research infrastructure, M4 on financial infrastructure and M5 on the administration of research. They were also covered in two issues raised by the technical evaluation, T9 on documentation and record-keeping and T10 on vehicle use and maintenance. These issues were discussed in sessions three and four.

The workshop considered that the top priority for research infrastructure was for SUA to have a proper manpower development plan for support staff and to create a Directorate of Research or other effective research coordination body. It was suggested that donor support be provided for training in support skills, and to enable SUA research management staff to visit other organizations in the region which have overcome the kinds of problems it is facing.

The top priority for improving financial infrastructure was thought to be reorganizing the supplies section of the Bursar's office to improve procurement and prevent losses. Second was a review and update of financial regulations followed by accounting orientation sessions for researchers.
In the area of documentation and record-keeping, it was recommended that SUA first prepare a proposal for building up the library as the national agricultural data bank. On vehicle use and maintenance, the workshop recommended that efforts to improve efficiency in the vehicle workshop, which have begun with the hiring of a transport manager, be enhanced through better hiring procedures, driver and mechanic training, inventory and stock control, supervision, procurement and training of researchers in vehicle use and maintenance. It was also recommended that SUA put in place a similar system for managing the other scientific equipment and adopt a standard set of specifications.

Tanzanian Government Priorities

Coordination of agricultural research at the national level has been weak for some time in Tanzania with research organizations answering to different ministries with no overall coordinating body. Although IDRC-supported research at SUA addresses national priorities, projects are formulated according to researchers' perceptions without benefit of a guiding framework at national or University level.

These weaknesses were identified in both the technical and management evaluations under issues M1 on national agricultural policies, T1 on national coordination of agricultural research, M2 on policy and guidelines at SUA, and T2 on the dominance of project funding. These issues were discussed in sessions one and two.

The workshop recommended that the top priority for improving national agricultural research coordination was for government to consider establishing a unique body responsible for coordinating all agricultural research, including the allocation of funds. All scientific programs should be accountable to this body. In order to achieve this, a review must first be carried out of all the existing legislation establishing research institutions, to iron out anomalies. Various other supporting
recommendations were made, including better use of Tanzanian rather than expatriate personnel at national level and the training of SUA students through work at government research institutions.

At institutional level, it was recommended that the most important task was for SUA to establish its own research plan, at university, faculty and department level, based on available resources and with a realistic time-frame. This would provide a framework for both researchers and donors and counteract the tendency for donor funding to dominate.

**Generation and Use of Knowledge and Technologies**

Despite the fact that IDRC-supported research at SUA has produced many papers, a germplasm collection, some potential new varieties of pulses and groundnuts and has attempted to assess one or two prototype technologies, not to mention producing a considerable amount of qualified manpower, links between research and utilization are poor. FSR, DFSR, Grain Storage, Charcoal Stoves, and Sorghum Utilization have attempted linkages to users but generally speaking the methodological approach needs a lot of improvement if research outputs are to have a practical impact in the long run.

These weaknesses were addressed in technical evaluation issues T3 on research and extension, T7 on on-farm research incorporating farmers' knowledge, T8 on seed production demonstration and T9 on production research. These issues were addressed in sessions five and six.

Participants recommended that a decentralized system of research and extension involving farmers was the most important action that could be taken to improve research and extension at national level. Such a system of "domain-specific research" should include its own localized information system and be centrally monitored with information disseminated across the national system as appropriate. It was
recommended that SUA could pilot this, but should begin with a better integration of extension in its own structure.

The workshop made detailed recommendations concerning on-farm research, specifying methodological and management improvements to farming systems research, crop and animal improvement programs and other research involving technological innovations. In particular, it was recommended that technology specification and choice be done through farmer/researcher/extension agent interaction in FSR. In crop and animal improvement programs the inclusion of farmers' criteria as well as environmental conditions was recommended. For other technological innovations, users' conditions, criteria and performance assessment were recommended to be systematically included based on researcher/user dialogue.

For production research, it was suggested that the most important thing was for SUA to develop a research implementation plan that includes research on production and dissemination. It was recommended that SUA develop its capacity for such research encompassing user needs, production technology, socio-economic feasibility, pilot production, monitoring and evaluation, and that donors should give the necessary support.

Seed production demonstration was a particular case of production research identified by the evaluation. The workshop concurred that it is probably the most important, emerging from current work, and that a pilot seed bulking demonstration project should be carried out in collaboration with TANSEED and in consultation with KILIMO, TOSCA and the National Seed Testing Laboratory.
Follow-up to the Evaluation

At the closing of the workshop SUA and IDRC concurred that participants had fulfilled the mandate given them at the opening: to review success, failures and practical strategies for change frankly and openly. Both the plenary and the working sessions were characterized by a high level of attendance and lively debate. Some complex and difficult issues had been discussed fully and without prejudice by participants from within and without SUA. True to the guidance given by the Chairman of Council and the Vice Chancellor at the start, the workshop had not shrunken from making recommendations affecting activities at the national level, and had not wasted time in being defensive.

This is likely to make its recommendations the more useful to those bodies who wish to use them as a basis for action, most particularly SUA itself and IDRC. As pointed out by the Regional Director of IDRC in his opening address, evaluation is a useful management tool, and SUA and IDRC will each use it in its own way. SUA needs to define its role and discharge the responsibilities of its new mandate. IDRC will use the output to review appropriate ways of strengthening research institutions' capacities which are complementary to project support. Thus the evaluation can help to review and recommend changes in policy and programs that affect not only SUA and Tanzania but perhaps the region as a whole.
Participants at the Evaluation Workshop

Photo: Masingira Institute
Above: The new DANIDA-funded veterinary complex.
Below: SUA vehicles are parked in the open near the maintenance workshop.

Photos: Masingira Institute
ANNEX ONE
OVERVIEW OF OTHER DONOR SUPPORT TO SUA

Since its inception as the Agriculture College in 1965 to the present day, Sokoine University of Agriculture has benefitted from generous contributions to physical and manpower development, as well as research, from various national and international donor agencies.

The Danish Agency for International Development and Cooperation, DANIDA, has provided assistance from 1972 to the present in the form of infrastructure and manpower development. This has included, for example, lecture theatres, dispensary, laboratories, multi-purpose hall, student hostels, junior and senior staff houses, green houses, offices, milking parlour extension to agricultural engineering and animal science department and a new veterinary complex. Support to manpower development has provided scholarships to enable Tanzanians to pursue higher studies locally and abroad. The assistance also provided for professors from abroad to teach in various departments in the short and long term.

The Norwegian Assistance for International Development and Cooperation, NORAD, support started in 1973 with the establishment of the Division of Forestry at Morogoro and is instrumental in the development of the present Faculty of Forestry of SUA. This grant has mainly been used for capital development of offices, classrooms, laboratories, equipment and staff housing. In addition NORAD has supported the development of Olmotonyi's Forest Training Station near Arusha. Significant support has also been in the form of expatriate staff as well as the training of local personnel who would eventually take over from them. NORAD has also assisted in staff development and establishment of M.Sc. courses in the Departments of Animal Science and Soil Science, while individual candidates have also been trained at Masters level in the Crop Science Department.
The United States Agency for International Development, USAID, and Ministry of Agriculture, KILIMO, support started in 1978 with the building of a Centre for Continuing Education, the provision of staff and manpower development, as well as equipping the Centre with the necessary audio-visual equipment and transport. The main purpose of the Centre for Continuing Education, CCE, which is in the process of being elevated to an Institute for Continuing Education, ICE, under Sokoine University of Agriculture, is to provide facilities for short courses, seminars, workshops and conferences for field staff from Tanzania involved in the fields of agriculture, forestry and veterinary science. The services of three expatriate staff were provided between 1980 and 1983, while several Tanzanian personnel were trained in United States at Ph.D. and M.Sc. levels. In addition, the Centre has a 12 room hostel to accommodate the visitors. Phase II expansion of the Centre is in progress to provide additional office accommodation, expansion of the hostel and a cafeteria. Funds under this project have mainly come from the PL 480 project (a fund built from proceeds accruing from sale of food donated by USA to Tanzania).

United Nations Development Program/Food and Agriculture Organisation, UNDP/FAO, technical assistance started in 1973 and terminated in 1978. The main aim of the project was to build local manpower to take over the teaching and research activities at the University. During the assistance period senior professional staff were provided in the Departments of Agricultural Engineering and Land Planning, Rural Economy, Crop Science and Soil Science. In addition an Associate Expert was attached to the Department of Agricultural Education and Extension. While the senior teaching staff under this project were in station, several fellowships were provided to train Tanzanians abroad leading to Masters and Ph.D. degrees in various disciplines of agriculture. Partial support was also provided under this project towards recurrent expenditure and research in form of transport, office equipment, secretarial assistance and field staff.
Assistance from the British Government is mainly the result of Tanzania's past relationship with Great Britain as a mandated territory, and later a trusteeship territory, and its present membership of the Commonwealth. Most of this assistance has been through the British Council, the Overseas Development Authority, ODA, and the Committee for International Cooperation in Higher Education, CICHE. The main emphasis has been on staff training, assistance to the library through acquisition of books and to a certain extent in the provision of equipment and chemicals for teaching and research. In the initial stages of the establishment of the Faculty, the British Government's Assistance was for provision of short term lectures to teach various courses. Only recently the British Government through its specialized agencies has supported the establishment and development of the Department of Food Science and Technology and the Department of Agricultural Engineering and Land Planning. These grants include infrastructure and staff development as well as curricula planning and development of two new degree programs in the Department of Food Science and Technology, namely the B.Sc. Food Science and Technology, and B.Sc. Home Economics and Human Nutrition.

The International Development Research Centre, IDRC, of Canada, has been supporting research at Morogoro since 1973. It has proved to be instrumental in building research capability, supporting services and trained manpower. Apart from support to Faculty of Agriculture, a small project on Charcoal Stoves and a Forestry Research Course were funded in the Faculty of Forestry. To date, IDRC does not have any project in the Faculty of Veterinary Medicine. The past and present projects are dealt with in detail elsewhere in this report and are summarized in Table 1 on page 4. IDRC's support has contributed towards building research capability and developing research support services for continued agricultural research undertaken in line with national research policies and priorities.
Japanese Government assistance was provided during the period 1973-1978 through Japanese Volunteers Overseas, JVO, a semi-government organization established with the aim of providing technical manpower assistance. A staff member was placed initially in the Department of Soil Science and Chemistry and later transferred to the newly established Department of Food Science and Technology. Several pieces of equipment were also provided, including an Amino Acid Analyser, Spectrophotometer, Gas-Liquid Chromatograph, audio visual equipment and chemicals. This assistance was meant for staff development and for building research capability and could be considered as the starting point of the Department of Food Science and Technology.

Assistance from the Federal Republic of Germany has been provided through DAAD, a governmental agency responsible for academic exchange and cooperation overseas. Through this assistance SUA has had two DAAD supported staff. The main support initially was to the Department of Rural Economy in 1975 and later in 1978 it was shifted to the Department of Agricultural Education and Extension. In addition to staff support, some recurrent expenditure is available for equipment and educational materials. Again this support could be classified as institution building.

During 1976-1978, the Netherlands Government provided assistance towards the development of horticultural training, research and production. This project was an off-shoot of a larger horticultural project supported by Dutch Government at Tengeru, Arusha. This grant provided the services of two horticulturists and a horticultural technician at Morogoro. In addition, capital development was provided in the form of three staff houses, vehicles, horticultural and laboratory equipment, as well as books for the library. Furthermore, some money was allocated as recurrent expenditure to assist the Department of Crop Science and the experts in the conduct of research and production activities at the Horticultural Unit.
Irish Government assistance came to the institution in 1980-81 to establish a Tanzania Literature Service, TLS, with the then Faculty Library. This facility was greatly needed because of the collapse of the East African Community which used to provide the literature support to the agricultural research staff through the East African Literature Service based at Muguga in Kenya. Under this grant, the services of an expert were provided to establish the photocopying services at the former Faculty Library. In addition, a multiple copying photocopy machine and materials were provided. There was also a provision for the training of xerox machine operator overseas. This is a good example of the creation of support services for teaching and research; this facility has been quite useful to staff engaged in agricultural research.

The Franco-Tanzanian Horticultural Project was started in 1982 to improve and develop horticultural production at subsistence farming level. This project is supported by the French Ministry of External Affairs, MRE, and non-governmental organizations (NGOs) and is multidisciplinary in nature. The expatriate staff provided have been placed in different departments namely Crop Science, Soil Science and Agricultural Education and Extension. Research activities under the project are carried out on station mainly at the Horticultural Unit of the Department of Crop Science while at the same time several activities are being conducted on farmers' fields in target villages in different agro-ecological zones of Morogoro Region. On site activities are directed towards the development of improved technology and planting material. Activities include variety trials, cultural practices (weeding, fertilizer or manure application), spacing, etc. On-farm trials also aim at assisting the farmer in efficient land and water utilization, seed production, etc. This project will continue at least up to 1988.

The Belgian Government has recently provided assistance to the Faculty of Veterinary Medicine for research on rodents as disease carriers and crop destroyers. Under this support there is provision for
infrastructure development in the form of staff housing, laboratory space and storage facilities along with equipment for the conduct of the research. The main objective of the grant is the identification, biology, ecology and control of local fauna with special reference to animal and human disease carriers and crop destroyers. This research will be carried out in collaboration with KILIMO's Rodent Control Project located at the SUA campus.

*Ford Foundation* assistance was centred in the Department of Rural Economy between 1975 and 1982. The aim was to strengthen the Department through staff development and establishment of support services. The Foundation wanted to create a centre of excellence in agricultural marketing. Similar grants were aimed at creating centres of excellence at Makerere in agricultural policy and planning and Nairobi University in Agricultural Extension. These centres were meant to exchange students from within East Africa. The project provided the services of an expert while several fellowships trained Rural Economy Department staff up to M.Sc. and Ph.D. levels. This project was instrumental in establishing the present computer facility. In addition, a small grant was provided for equipment including a duplicating machine and recurrent expenditure to support research.

*Rockefeller Foundation* support was in the form of one senior member of staff at the rank of Professor during 1976 to 1982. The main purpose was to strengthen the newly established Department of Agricultural Education and Extension whose younger staff members were at that time studying for higher degrees locally and abroad. In addition, this project helped the Department of Agricultural Education and Extension in curriculum development. Basically, therefore, the Rockefeller Foundation support was for institution building. Looking back in retrospect, this project contributed towards the establishment of the Centre for Continuing Education, CCE.
The Cooperative Research Support Program CRSP Title XII, USAID was established at Morogoro in 1980 with the aim of conducting research on beans (Phaseolus vulgaris) for the benefit of Tanzania and other Eastern African Countries. As the title suggests this project is a cooperative program among Sokoine University of Agriculture, Washington State University at Pullman, USA, and University of Illinois, Urbana Champaign, USA. There is collaboration with Centro Internacional de Agricultura Tropical, CIAT, at Cali, Columbia, South America. The management office of this project is located in Michigan State University at East Lansing, Michigan, in USA. The aim of the project is to produce disease, insect and drought resistant bean varieties suitable for different agro-ecological zones of Tanzania, where beans form the most important legume crop in the diets of Tanzanians. This project is multidisciplinary in approach, involving the Department of Crop Science, Rural Economy, Food Science and Technology, Soil Science, Agricultural Engineering and Land Planning, and to a certain extent Agricultural Education and Extension. In other words the Bean Project seeks cooperation from virtually all departments of the Faculty of Agriculture. Multidisciplinary cooperation is essential to achieve the ultimate aim of raising the bean productivity of the Tanzanian subsistence farmer, improving his/hers standard of living and alleviating protein malnutrition. Apart from the in-house cooperation and collaboration between different departments at SUA, the Bean Project has active cooperation from the various Agricultural Research Centres and Institutions in Tanzania. This project encompasses all three typical components of an agricultural research project namely research, training and institution building. Equal emphasis has been given to components during the past five years.

A grant from International Atomic Energy Agency IAEA was initiated in 1973 in cooperation with Ministry of Agriculture to conduct research for the improvement of rice in Tanzania. The aim was to improve the nutritional quality and yield of rice through mutation breeding. Apart from the irradiation facilities at IAEA headquarters
at Vienna, Austria, a small amount of money was also provided for recurrent expenses for field experimentation and multilocation trials. From 1981 onwards IAEA has expanded its support to provide equipment such as a neutrone probe for soil moisture studies, geiger counter, isotopes and other chemicals for uptake and metabolism of plant nutrients and pesticides. The services of an expert were also provided for a period of six months to set up a radio-isotope laboratory and train local staff in the maintenance of equipment and use of radio-isotopes in agriculture.

The International Rice Research Institute, IRRI, provides indirect assistance to SUA under a broad agreement between IRRI and the Government of the Republic of Tanzania. At present the main support has been in terms of staff training at IRRI headquarters located at Los Banos, Philippines. However, it is anticipated that in the near future a cooperative research program will be initiated.

There is a recently concluded agreement between International Institute of Tropical Agriculture, IITA, and SUA that the former will establish their training and research programs for East and Central Africa at Morogoro. The intention is to conduct short term training of middle and lower level agricultural workers from Tanzanian and other Eastern African countries on the production, protection and extension of IITA mandated crops such as cowpeas, cassava, soybean, rice, maize, sweet potatoes, yams, etc. A small research component has also been provided for in the project. IITA will provide senior training and research staff, staff housing, transport and research materials. Prior to this project IITA has been instrumental in providing post-graduate and short term training fellowships to SUA staff at their main station located at Ibadan, Nigeria.

Various grants have been provided by the Swedish Agency for Research Cooperation with Developing Countries, SAREC, International Foundation for Science, IFS, Tanzania National Scientific Research Council, UTAFITI, Commonwealth Science Council, CSC, and others to individual
scientists at SUA. The aim is to build the research capabilities of individual researchers, while keeping in mind national research priorities. For example, the Commonwealth Science Council supports research on Solar Crop drying. SAREC supported investigations on the measurement of nitrogen fixation in trees and Ford Foundation funded a research on aggregate supply analysis of Food Crops in Kigoma Region of Tanzania. Although these are not institutional grants they enhance the research capability of individuals within the institution.

This short account has attempted to summarize the various externally funded projects since 1972. It is obvious from the foregoing account that there are basically two types of projects. Institution building projects exemplified by DANIDA and NORAD support have a large component of capital expenditure as well as training and technical assistance. Research support is typified by the IDRC and CRSP projects. It is difficult to describe these projects in exact monetary terms, because in many projects, apart from recurrent expenditure, there are indirect costs such as salaries of personnel, and administrative costs such as clearing and forwarding of supplies and equipment. However, it would not be very unrealistic if one puts the monetary contribution of all donor agencies to SUA in the region of US $16.25 million. Thus the IDRC contribution forms approximately 8½% of the total external donor assistance provided to the institution. It may also be added that IDRC has been the largest donor of research funds as well as being one of SUA's earliest donors. It is in the interest of the recipient institution to integrate the two types of grants, institution building and research support, into a coherent program. In an educational institution it is imperative that research should be an integral part of training for the benefit of the individual and the country at large.
Participants at the Evaluation Workshop

Photos: Mazingira Institute
# ANNEX TWO: LIST OF PARTICIPANTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution &amp; Department</th>
<th>Position</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. N.T.A. Bangu</td>
<td>SUA, Food Science &amp; Technology</td>
<td>Lecturer</td>
<td>PO Box 3006 Morogoro</td>
</tr>
<tr>
<td>2. A.N.H. Duale</td>
<td>SUA, Crop Science &amp; Production</td>
<td>M.Sc. Student</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>3. A.L. Doto</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Senior Lecturer</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>4. K. Gessesse</td>
<td>SUA, Library</td>
<td>Senior Librarian</td>
<td>PO Box 3022 Morogoro</td>
</tr>
<tr>
<td>5. Getaneh Y.</td>
<td>Ethiopian Science &amp; Technology Commission</td>
<td>Evaluation Consultant</td>
<td>PO Box 2490 Addis Ababa, Ethiopia</td>
</tr>
<tr>
<td>7. A.K. Karel</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Associate Professor</td>
<td>PO Box 3042 Morogoro</td>
</tr>
<tr>
<td>8. L.L Ilmolelian</td>
<td>KILIMO, Research &amp; Training</td>
<td>Director</td>
<td>PO Box 9152 Dar-es-Salaam</td>
</tr>
<tr>
<td>9. K.J.B. Kergero</td>
<td>SUA, Centre for Continuing Education</td>
<td>Acting Director</td>
<td>PO Box 3044 Morogoro</td>
</tr>
<tr>
<td>10. C.L. Keswani</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Professor</td>
<td>PO Box 3005 Morogoro*</td>
</tr>
<tr>
<td>11. B.M. Kessy</td>
<td>SUA</td>
<td>Senior Lecturer</td>
<td>PO Box 3020 Morogoro</td>
</tr>
<tr>
<td>12. R.A. Kirkby</td>
<td>IDRC, Regional Office (AFNS)</td>
<td>Senior Program Officer</td>
<td>PO Box 62084 Nairobi, Kenya</td>
</tr>
<tr>
<td>13. N.A. Kuhanga</td>
<td>U. of Dar-es-Salaam</td>
<td>Vice Chancellor</td>
<td>PO Box 35091 Dar-es-Salaam</td>
</tr>
<tr>
<td>14. M.L. Kyomo</td>
<td>SUA, Animal Science &amp; Production</td>
<td>Professor</td>
<td>PO Box 3000 Morogoro**</td>
</tr>
<tr>
<td>15. V.L. Kyulule</td>
<td>SUA, Development Studies</td>
<td>Lecturer</td>
<td>PO Box 3024 Morogoro</td>
</tr>
<tr>
<td>16. D. Lamba</td>
<td>Mazingira Institute</td>
<td>Executive Director</td>
<td>PO Box 14550 Nairobi, Kenya</td>
</tr>
<tr>
<td>17. D. Lee-Smith</td>
<td>Mazingira Institute</td>
<td>Evaluation Consultant</td>
<td>PO Box 14550 Nairobi, Kenya</td>
</tr>
</tbody>
</table>

* now: Plant Protection Research Institute, R&SS, PO Box 8100 Causeway, Harare, Zimbabwe

** now: SACCAR, P. Bag 00108 Gaborone, Botswana
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution &amp; Department</th>
<th>Position</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 A.B. Lwoga</td>
<td>SUA</td>
<td>Deputy Vice-Chancellor</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>19 J.A. Maghembe</td>
<td>SUA, Forest Biology</td>
<td>Head of Department</td>
<td>PO Box 3010 Morogoro</td>
</tr>
<tr>
<td>20 O.B. Mapunda</td>
<td>SUA</td>
<td>Chief Planning Officer</td>
<td>PO Box 3000 Morogoro</td>
</tr>
<tr>
<td>21 N.G.M. Maseki</td>
<td>SUA, Faculty of Forestry</td>
<td>MMO</td>
<td>PO Box 3009 Morogoro</td>
</tr>
<tr>
<td>22 J.J. Massawe</td>
<td>SUA, Library</td>
<td>Librarian</td>
<td>PO Box 3022 Morogoro</td>
</tr>
<tr>
<td>23 A.Z. Mattee</td>
<td>SUA, Ag. Education &amp; Extension</td>
<td>Lecturer</td>
<td>PO Box 3002 Morogoro</td>
</tr>
<tr>
<td>25 S.S. Mbwana</td>
<td>SUA, Library</td>
<td>Head</td>
<td>PO Box 3022 Morogoro</td>
</tr>
<tr>
<td>26 K.K.M. Mgaya</td>
<td>U. of Dar-es-Salaam Faculty of Commerce &amp; Mngmt.</td>
<td>Lecturer</td>
<td>PO Box 35046 Dar-es-Salaam</td>
</tr>
<tr>
<td>27 M. Mgheni</td>
<td>SUA, Animal Science &amp; Production</td>
<td>Senior Lecturer</td>
<td>PO Box 3004 Dar-es-Salaam</td>
</tr>
<tr>
<td>28 A.N. Minjas</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Senior Lecturer</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>29 G.R.V. Mmari</td>
<td>SUA</td>
<td>Vice Chancellor</td>
<td>PO Box 3000 Morogoro</td>
</tr>
<tr>
<td>30 E.G. Moyo</td>
<td>KILIMO</td>
<td>Asst. Commissioner of Agriculture</td>
<td>PO Box 9192 Dar-es-Salaam</td>
</tr>
<tr>
<td>31 A.N. Mphuru</td>
<td>SUA, Faculty of Agriculture</td>
<td>Acting Dean</td>
<td>PO Box 3001 Morogoro</td>
</tr>
<tr>
<td>32 G.C. Mrema</td>
<td>SUA, Agricultural Engineering</td>
<td>Associate Professor</td>
<td>PO Box 3003 Morogoro</td>
</tr>
<tr>
<td>33 K.E. Mshigeni</td>
<td>U. of Dar-es-Salaam Postgraduate Studies</td>
<td>Director</td>
<td>PO Box 35091 Dar-es-Salaam</td>
</tr>
<tr>
<td>34 L.A. Mtenga</td>
<td>SUA, Animal Science &amp; Production</td>
<td>Head of Department</td>
<td>PO Box 3004 Morogoro</td>
</tr>
<tr>
<td>35 M.H. Nguruwe</td>
<td>SUA, Bursar's Office</td>
<td>Accountant</td>
<td>PO Box 3089 Morogoro</td>
</tr>
<tr>
<td>Name</td>
<td>Institution &amp; Department</td>
<td>Position</td>
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</tr>
<tr>
<td>36 A. Nnko</td>
<td>U. of Dar-es-Salaam Faculty of Commerce &amp; Mngmt.</td>
<td>Lecturer</td>
<td>PO Box 35046 Dar-es-Salaam</td>
</tr>
<tr>
<td>37 S.O.W.M. Reuben</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Assistant Lecturer</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>38 W.N. Ringo</td>
<td>SUA, Wood Utilization</td>
<td>Senior Lecturer</td>
<td>PO Box 3014 Morogoro</td>
</tr>
<tr>
<td>39 J. Rugambisa</td>
<td>SUA, Rural Economy</td>
<td>Lecturer</td>
<td>PO Box 3007 Morogoro</td>
</tr>
<tr>
<td>40 G. Ruhinda</td>
<td>UTAFITI</td>
<td>Scientific Officer</td>
<td>PO Box 4302 Dar-es-Salaam</td>
</tr>
<tr>
<td>41 M.P. Salema</td>
<td>SUA, Soil Science</td>
<td>Lecturer</td>
<td>PO Box 3008 Morogoro</td>
</tr>
<tr>
<td>42 R.B. Scott</td>
<td>IDRC, Regional Director</td>
<td>Director</td>
<td>PO Box 62084 Nairobi, Kenya</td>
</tr>
<tr>
<td>43 J.M.R. Semoka</td>
<td>SUA, Soil Science</td>
<td>Senior Lecturer</td>
<td>PO Box 3008 Morogoro</td>
</tr>
<tr>
<td>44 E.M. Senkondo</td>
<td>SUA, Rural Economy</td>
<td>Tutorial Assistant</td>
<td>PO Box 3007 Morogoro</td>
</tr>
<tr>
<td>45 F.J. Senkondo</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Assistant Lecturer</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>46 C. Shayo</td>
<td>U. of Dar-es-Salaam Faculty of Commerce &amp; Mngmt.</td>
<td>Assistant Lecturer</td>
<td>PO Box 35046 Dar-es-Salaam</td>
</tr>
<tr>
<td>47 S.A. Shayo</td>
<td>SUA, Rural Economy</td>
<td>Senior Lecturer</td>
<td>PO Box 3007 Morogoro</td>
</tr>
<tr>
<td>48 T. Smutylo</td>
<td>IDRC, Office of Planning &amp; Evaluation</td>
<td>Senior Planning Officer</td>
<td>PO Box 8500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60 Queen St. Ottawa K1G 3H9 Canada</td>
</tr>
<tr>
<td>49 A.J.P. Tarimo</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Assistant Lecturer</td>
<td>PO Box 3005 Morogoro</td>
</tr>
<tr>
<td>50 C.S. Tarimo</td>
<td>TALIRO, Research &amp; Planning</td>
<td>Director</td>
<td>PO Box 6910 Dar-es-Salaam</td>
</tr>
<tr>
<td>51 J.M. Teri</td>
<td>SUA, Crop Science &amp; Production</td>
<td>Associate Professor</td>
<td>PO Box 3005 Morogoro</td>
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<tr>
<td>52 A.B. Temu</td>
<td>SUA, Faculty of Forestry</td>
<td>Dean</td>
<td>PO Box 3009 Morogoro</td>
</tr>
<tr>
<td>53 N.A. Uri</td>
<td>SUA, Animal Science &amp; Production</td>
<td>Senior Lecturer</td>
<td>PO Box 3004 Morogoro</td>
</tr>
</tbody>
</table>
Participants at the Evaluation Workshop

Photo: Mazingira Institute
ANNEX THREE
LIST OF DOCUMENTS

EVALUATION OF IDRC-SUPPORTED RESEARCH PROJECTS AT
SOKOINE UNIVERSITY OF AGRICULTURE, TANZANIA

1. REPORT FOR THE EVALUATION WORKSHOP
   20th-22nd August 1985, SUA, Morogoro

2. DOCUMENTS ANNEX
   August 1985
   Prepared by:
   Sokoine University of Agriculture, Morogoro, Tanzania
   Mazingira Institute, Nairobi, Kenya
   Faculty of Commerce, University of Dar-es-Salaan, Tanzania
   with support from:
   International Development Research Centre (IDRC)

3. DRAFT MANAGEMENT REPORT
   Prepared by:
   Faculty of Commerce, University of Dar-es-Salaam, Tanzania

Documents 1 and 2 are available on file at IDRC Regional Office
Nairobi and at SUA Library Morogoro.
Document 3 is available from Faculty of Commerce and Management,
University of Dar-es-Salaam.
ANNEX FOUR
LIST OF ABBREVIATIONS AND TANZANIAN TERMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFNS</td>
<td>Agriculture Food &amp; Nutrition Sciences, Division of IDRC</td>
</tr>
<tr>
<td>CAD $</td>
<td>Canadian Dollar</td>
</tr>
<tr>
<td>CCE</td>
<td>Centre for Continuing Education, SUA</td>
</tr>
<tr>
<td>CIMMYT</td>
<td>Centro Internacional del Mejoramiento del Maiz y el Trigo (International Maize &amp; Wheat Improvement Centre)</td>
</tr>
<tr>
<td>CS</td>
<td>Charcoal Stoves Research</td>
</tr>
<tr>
<td>DADO</td>
<td>District Agricultural Development Officer</td>
</tr>
<tr>
<td>DEVPLAN</td>
<td>Ministry of Development Planning</td>
</tr>
<tr>
<td>DFSR</td>
<td>Dairy Feeding Systems Research</td>
</tr>
<tr>
<td>ELIMU</td>
<td>Ministry of National Education</td>
</tr>
<tr>
<td>FEDHA</td>
<td>Ministry of Finance (Treasury)</td>
</tr>
<tr>
<td>FSR</td>
<td>Farming Systems Research</td>
</tr>
<tr>
<td>GAPEX</td>
<td>General Agricultural Products Export</td>
</tr>
<tr>
<td>GS</td>
<td>Grain Storage Research</td>
</tr>
<tr>
<td>IDRC</td>
<td>International Development Research Centre</td>
</tr>
<tr>
<td>KILIMO</td>
<td>Ministry of Agriculture &amp; Livestock Development</td>
</tr>
<tr>
<td>MALIASILI</td>
<td>Ministry of Natural Resources</td>
</tr>
<tr>
<td>MDB</td>
<td>Marketing Development Bureau</td>
</tr>
<tr>
<td>NAFCO</td>
<td>National Agricultural Food Corporation</td>
</tr>
<tr>
<td>NBC</td>
<td>National Bank of Commerce</td>
</tr>
<tr>
<td>NMC</td>
<td>National Milling Corporation</td>
</tr>
<tr>
<td>OPE</td>
<td>Office of Planning &amp; Evaluation, IDRC</td>
</tr>
<tr>
<td>PGIP</td>
<td>Pulses &amp; Groundnuts Improvement Project</td>
</tr>
<tr>
<td>RADO</td>
<td>Regional Agricultural Development Officer</td>
</tr>
<tr>
<td>RDD</td>
<td>Regional Development Director</td>
</tr>
<tr>
<td>R &amp; E</td>
<td>Research &amp; Extension</td>
</tr>
<tr>
<td>RIDEPE</td>
<td>Regional Integrated Development Project</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Name</td>
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<td>---------</td>
<td>-----------</td>
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<tr>
<td>SIDO</td>
<td>Small Industries Development Organization</td>
</tr>
<tr>
<td>SCOPO</td>
<td>Standing Committee on Parastatal Organizations</td>
</tr>
<tr>
<td>SRPC</td>
<td>Senate Research &amp; Publications Committee (SUA)</td>
</tr>
<tr>
<td>SU</td>
<td>Sorghum Utilization Research</td>
</tr>
<tr>
<td>SUA</td>
<td>Sokoine University of Agriculture</td>
</tr>
<tr>
<td>TALIRO</td>
<td>Tanzania Livestock Research Organization</td>
</tr>
<tr>
<td>TANSEED</td>
<td>Tanzania Seed Company</td>
</tr>
<tr>
<td>TARO</td>
<td>Tanzania Agricultural Research Organization</td>
</tr>
<tr>
<td>TBS</td>
<td>Tanzania Bureau of Standards</td>
</tr>
<tr>
<td>TFA</td>
<td>Tanzania Farmers Association</td>
</tr>
<tr>
<td>TFNC</td>
<td>Tanzania Food &amp; Nutrition Centre</td>
</tr>
<tr>
<td>TIB</td>
<td>Tanzania Investment Bank</td>
</tr>
<tr>
<td>TIRDO</td>
<td>Tanzania Industrial Research &amp; Development Organization</td>
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<tr>
<td>TLS</td>
<td>Tanzania Library Service</td>
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<tr>
<td>TOSCA</td>
<td>Tanzania Official Seed Certification Agency</td>
</tr>
<tr>
<td>TPRI</td>
<td>Tropical Pesticides Research Institute</td>
</tr>
<tr>
<td>UAC</td>
<td>Uyole Agricultural College</td>
</tr>
<tr>
<td>Ugali</td>
<td>Stiff maize porridge; staple food</td>
</tr>
<tr>
<td>UTAFITI</td>
<td>Tanzania National Scientific Research Council</td>
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<tr>
<td>UWT</td>
<td>Umoja wa Wanawake wa Tanzania (Tanzanian Women's Organization)</td>
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