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SADCC — Southern African Development Coordination Conference

# COOPERATION IN AGRICULTURAL RESEARCH

to:

The United States Agency for International Development
Harare, Zimbabwe

The International Agricultural Development Service
Rosslyn Plaza, 1611 N. Kent Street,
Arlington, Virginia, 22209, U.S.A.

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Submitted to:

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Harare, Zimbabwe

By: The International Agricultural Development Service
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TABLE OF CONTENTS

Page



a

Annexes (continued)

# EXECUTIVE SUMMARY

## The Report

This is a report on cooperation in agricultural research among the nine countries covered by SADCC - The Southern African Development Coordination Conference.[1/] The study leading to the report is based on a proposal submitted by the Government of Botswana to SADCC, as recommended by the Consultative Technical Committee (CTC) for Agricultural Research, which called for the establishment of a small regional coordination centre in Botswana for agricultural research. On behalf of SADCC, USAID agreed to arrange for an international team of specialists to carry out a study concerning such centre, and to report on its findings and recommendations.

## Current Status and Views on Cooperation

Some cooperation exists between some of the countries, although it is quite uneven and generally of an informal nature. The CTC for Agricultural Research is a recently-established mechanism which enables cooperation to be placed on a sounder basis. There is also considerable involvement of external research institutions (e.g. international centres and USAID-funded Collaborative Research Support Projects), as well as of external donor agencies supporting research, but there tends to be limited coordination among their efforts. CDA - Cooperation for Development in Africa - is a development support grouping of some of the donor agencies, currently seven countries, which includes in its plans cooperation in support to agricultural research in the SADCC region.

There is a general feeling among agricultural scientists in the region on the need to strengthen cooperation across national boundaries.

Also, in general, these scientists in the region support the idea of a small centre for promotion of cooperation and coordination, and agree, in large measure, on its role and functions. These scientists identified areas of relative strength in individual national agricultural research systems, which can be used as country contributions to regional cooperation.

## Establishment of a Centre

Based on its discussions with national scientists, and on its own experiences, the study team supported the proposal for establishment of a Southern African Centre for Cooperation in Agricultural Research (SACCAR). In its report, the Team describes in detail SACCAR's role, activities, location, staff, physical facilities, and relationship to organizations in SADCC, the Ministry of Agriculture (Botswana), donor agencies, and international agricultural research institutions.

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1/ A list of acronyms and abbreviations used in the report is located behind the annexes.

The report recommends that SACCAR be located at Sebele, with the Agricultural Research Station and College of Agriculture complex. It would be a modest centre in terms of physical facilities and staff, but an ambitious one in terms of activities and objectives.

The functions of SACCAR would be of two general categories - service and cooperation. The service functions, for which SACCAR would have the direct responsibility, and would fund through its budget, include:

- the Secretariat for the CTC for Agricultural Research;
- documentation on regional agricultural research and development policies and plans;
- an inventory of research (national and regional);
- research program reviews;
- publications (including a newsletter and an SADCC agricultural research journal);
- studies, workshops, etc. on common problems; and
- manpower training and career development (including regional travel grants, small research grants, training workshops, and manpower assessment studies).

Cooperation would be in respect to inputs to research of the region by external donors and research institutions, including international agencies and associations such as OAU/STRC and AAASA.

The proposed staff consists of a Director, a Manpower and Training Officer, an Information/Publications Officer, an Administrative/Accounts Officer, and basic support staff. At least one of the professional staff should have Portuguese as the language of education. To the extent feasible, all should be recruited from within the region, but if fully qualified regional candidates are not available, recruitment should be extended outside the region.

## A Five-Year Plan and Budget

The report presents a five-year plan which includes staffing, physical facilities and activities. All basic staff should be recruited as early as possible in the first year. It will be necessary to construct an office building and staff houses. Both should start as soon as possible during the first year, with the goal of completing them early in the second year.

The overall estimated cost for SACCAR for the first five years is US$ 5,241,300, consisting of $597,600 for capital costs, $1,615,100 for general operating expenses, and $3,028,600 for program expenses. The largest component of the capital costs budget is buildings (US$ 413,000).

The general operating expenses make up 30.8% of the overall budget, or about 35% of the recurrent budget (general operating expenses plus program expenses). Salaries and benefits of senior and support staff, the largest component in the general operating expenses budget, constitute about 20.5% of the recurrent budget, reflecting the emphasis on the service role of SADCAR.

The Team takes the position that SADCC members themselves should provide financial support early on for the Centre. Outside support should be on a multi-donor basis to insure broadbased donor participation, facilitate an effective centre-donor interaction, and provide a greater stability of support.

# I. Background

## A. Southern African Development Coordination Conference (SADCC)

SADCC is an economic and technical cooperation body formed in April 1980 at the Lusaka Summit by the Heads of State and Government of the nine majority-ruled states in Southern Africa. The Members are Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe.

The aims of SADCC are two-fold: first, to pool resources and coordinate mutual development in agriculture, communications, industry, transport and other fields; second, to reduce member states' dependence, particularly, but not only, on South Africa.

The task of developing projects to achieve these aims is divided between individual member countries which are given special responsibility in specific areas. The present assignment of responsibilities is given below:

| Country | Responsible for |
|---|---|
| Angola | Energy |
| Botswana | Agricultural research<br>Animal disease control |
| Lesotho | Soil conservation and land utilization |
| Malawi | Fisheries, wildlife and forestry |
| Mozambique | Transport and communication |
| Swaziland | Manpower development and training |
| Tanzania | Industrial Development |
| Zambia | Mining<br>Southern African Development Fund |
| Zimbabwe | Food Security |

The apex structure of SADCC consists of the Heads of State of member countries who hold summit meetings. Next is a "cabinet level" Council of Ministers, followed by a Standing Committee of senior officials. A number of sectorial committees have been set up, for each of which one state has special responsibility. A small secretariat to serve the activities of SADCC has been established in Gaborone.

Of paramount importance to the development of the SADCC region is agriculture, particularly self-sufficiency in food supplies. To this end, the Lusaka Summit accorded high priority to agricultural research and development as a means of solving the problems of inadequate food supply and increasing reliance on food imports, especially from South Africa.

Most of the SADCC region lies in the semi-arid tropics, and the directive of the Heads of State was that priority in agricultural research be given to the drier areas of the SADCC region. ICRISAT,

which under the CGIAR has an international mandate for specific crops[1/] and farming systems research in the semi-arid tropics, was urged to set up a Southern Africa Regional Centre in Botswana to serve the SADCC region.

## B. Botswana as coordinator of agricultural research

### 1. Responsibility

Initially, the Lusaka Summit resolution on agriculture gave Botswana responsibility for coordination of crops research. However, at the Blantyre meeting of the Council of Ministers in November 1981, it was suggested that "further work on the coordination of crops research might suitably be incorporated in the work Zimbabwe was doing in the field of coordination of regional food security." Subsequently, at the SADCC Agricultural Ministers' meeting in Harare in November 1982, it was recommended to the SADCC Council of Ministers that Botswana should be given responsibility for coordination of agricultural research (including crops and livestock). This recommendation was accepted by the Council of Ministers at the Maseru meeting in January 1983.

### 2. Development of regional projects

As a follow up to the Lusaka Summit resolution and in response to a formal request made by Botswana in August 1980, ICRISAT sent a fact-finding Mission to the SADCC countries in November 1980. The Mission felt that the establishment of a regional centre would not be in the best interests of the SADCC countries, but recommended the development of regional agricultural research projects manned by multidisciplinary teams of scientists, and located in appropriate places on existing national research stations. Further, the Mission felt that there was need for a coordinating cell to liaise effectively among countries in the SADCC, and between the countries, the IARCs and other regional and international organizations. In line with the resolution of the Heads of State, this should be in Botswana.

ICRISAT and Botswana have subsequently developed four regional projects which were approved at the Council of Ministers meeting in January 1982 at Maseru. These projects are: (a) Sorghum and Millet Improvement, to be based in Zimbabwe; (b) Groundnut Improvement[2/], based in Malawi; (c) Improved Water Management for Agriculture, to be based in Botswana, and (d) A Consultancy on the Establishment and Operation of a Centre for the Coordination of Agricultural Research in the SADCC countries.

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1/ Sorghum, millets, pigeon peas, chickpeas, and groundnuts.

2/ This project is expected to be broadened to include other grain legumes.

C. Consultative Technical Committee (CTC) for Agricultural Research

The CTC for Agricultural Research is one of three advisory committees under the SADCC Food Security Program (coordinated by Zimbabwe). The other CTCs are in Extension and Training, Agricultural Economics, and Marketing. The three CTCs meet concurrently and also have joint sessions in Harare since USAID funds for their support are allocated to Zimbabwe. The CTC for Agricultural Research consists of Directors of Agricultural Research of the nine SADCC member countries.[1/] It deals with agricultural research matters related to food security. Its recommendations are taken up by Zimbabwe, as Food Security coordinator, and presented to the Council of Ministers. Three meetings have so far been held. Botswana has appropriately used these meetings to sound opinions and vet ideas on regional agricultural research before they are presented to the SADCC Council of Ministers by Botswana, as coordinator of agricultural research. There is thus close collaboration and interaction between Food Security and Agricultural Research programs.

D. International Agricultural Research Centres (IARCs) and other research institutions

Since the establishment of SADCC, a number of IARCs and other institutions have expressed interest in, or actually taken positive action to support, regional agricultural research activities. As mentioned earlier, ICRISAT, in conjunction with Botswana, is developing three projects in: sorghum and millet (to be funded by the USAID and other donors), groundnuts (funded by IDRC), and improved water management for agriculture. Interest in supporting the latter project has been expressed by the Australian Centre for International Agricultural Research (ACIAR), ODA, and USAID. CIMMYT is already involved in an on-farm research network in the region. Other organizations with plans to establish regional projects are: CIAT (beans), ECA (maize research centre), IITA (testing of maize, rice, cowpea and soya bean), and CIP (potatoes).

The interest shown by the international organizations and donor agencies in supporting SADCC regional agricultural research is a good response to the Lusaka Summit resolution to extend cooperation to external organizations for Southern African regional development.

E. Cooperation for Development in Africa (CDA) and other donors

CDA is currently a group of seven donors (Canada, Belgium, France, West Germany, Italy, U.S.A. and the United Kingdom) which have stated an intent to cooperate in providing long-term support for a few selected areas, among which is agricultural research.

CDA and SADCC can be viewed as having been created with the same basic philosophy: commitment to long-term cooperation. In order to facilitate

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1/ It is noted that in Tanzania, crops and livestock research are in separate organizations. The Director General of the crops research organization (TARO) is a member of the CTC for research.

cooperation between the two groups in agricultural research, CDA donors have agreed that, before they enter into any long-term commitment, they would like to go through a four-step process, as follows:

1. Reconnaissance visits to the individual countries;

2. Regional consultative meetings;

3. Preparation of a research inventory and assessment report; and

4. Preparation of a longer-term zonal plan.

The April 1983 meeting of the CTC for Agricultural Research recommended that a joint SADCC/CDA committee be established for the purpose of implementing step "3" and making recommendations about step "4". SADCC members of the committee are Malawi, Mozambique, and Botswana. A draft report is expected by October 1983.

Several other organizations outside of CDA provide financial support to agricultural research in the region. Included are SIDA, NORAD, SAREC, FAO, UNDP, The World Bank, IFAD, Belgium, the Netherlands, Argentina, Yugoslavia and Cuba.

## F. Proposal to establish an agricultural research coordination centre

A full response to the Lusaka Summit Resolution made by SADCC Heads of State calls for an institutional component to coordinate research in the region, and to encourage cooperation in agricultural research among the nine countries. In response, ICRISAT and Botswana have recommended a study leading to the establishment of an agricultural research coordination centre.

The USAID Mission in Zimbabwe agreed, on behalf of SADCC, to provide the funds required to carry out the study on a regional coordinating centre, and the International Agricultural Development Service (IADS) was contracted to do the study.

# II. The Study

## A. Terms of Reference

The Team was charged to conduct a study on the establishment and operation of a centre for the coordination of agricultural research in the SADCC countries. Countries were to be queried with respect to their perceived need for and functions of such a centre, and the team was to identify areas of relative strength in the research program of the countries which may be the basis of national support to the centre.

On the basis of its study, the team was charged to prepare a detailed report which should contain a phased five-year plan of work, to include staffing, facilities and budget.

The detailed terms of reference are appended in Annex 1.

## B. The Team

The study team consisted of:

1. Dr. Guy B. Baird, IADS, U.S.A., Leader
2. Dr. Martin L. Kyomo, Dean, Faculty of Agriculture, University of Dar-Es-Salaam, Tanzania
3. Dr. Eugenio Martinez S., Agricultural Scientist, the Rockefeller Foundation, Brazil
4. Dr. Lewis K. Mughogho, Principal Plant Pathologist, ICRISAT, India
5. Dr. J. B. D. Robinson, ODA, England

A resume for each member is given in Annex 2.

## C. The Program

The full team assembled in Gaborone on Monday, June 13 and spent most of the first three days of that week meeting with Government officials, members of assistance agencies, and in making plans for visits to the other countries of the region. Persons contacted throughout the study are listed in Annex 3 (a-i), under the appropriate country write up. Documents consulted during the review appear in Annex 3, as they relate to specific countries; or in Annex 4, when they were of a more general nature.

The full team arrived in Harare on Thursday, June 16 and met with officials on that day and Friday. Then, the team split up for visits to the other countries. One member (Kyomo) went to Lesotho and Swaziland;

another (Martinez) to Mozambique and Angola; two (Mughogho and Baird) to Zambia; and one (Robinson) to Malawi and Tanzania.

On completion of country visits, the team reassembled in Gaborone to prepare the study report.

The team, being aware of the planned SADCC (CTC Agricultural Research)/CDA development of a detailed assessment and inventory of national agricultural research systems of the nine countries of the region, did not attempt to fully characterize the systems. Rather, it concentrated only on areas deemed important in relation to the proposed regional centre for coordination of agricultural research. Basically, the information obtained at the country level dealt with:

1. The components of the national agricultural research systems and relationships among them;

2. Priorities and strengths in research;

3. Publications;

4. Interaction of the research system with counterparts in other SADCC countries;

5. Cooperation with research and research support organizations outside the SADCC region (i.e. IARCs and assistance organizations such as the World Bank); and

6. Views of the research system on the need for and nature of regional cooperation.

## D. The Report

On July 20 and 21, 1983, two members of the team (Baird and Kyomo) briefed the Government of Botswana (Ministry of Agriculture) and USAID in Zimbabwe, respectively, on its collective findings and recommendations. A copy of the draft team report was provided to each for their comments.

After receipt of comments of the draft report, the final version was prepared and submitted to USAID in Zimbabwe in August 1983.

# III. The Current Status of Cooperation in Agricultural Research in the Region

Before attempting to identify ways to strengthen cooperation in agricultural research, the Team considered it important to assess the current situation. What are the nature and level of cooperation and coordination (a) among the components of the agricultural research system within individual countries; (b) among the countries; and (c) between the countries and external research institutions and donor agencies?

The results of this assessment are summarized below. Information in greater detail, by countries, is presented in Annex 3 (a-i).

## A. Cooperation within individual countries

The number of institutions in the national agricultural research systems (NARS)[1/] varies from country to country (Table III.1). One or more of the following institutions are found in any one country:

- national research council (may plan, coordinate, and implement research; includes more than agricultural research);
- agricultural research council/organization (may be largely advisory, or serve as a coordinating body, but may also have substantive role in actual conduct of research);
- research department/division of the national Ministry of Agriculture, or its equivalent (the most common element of the national agricultural research system, and which commonly receives the most attention by government and donors);
- faculty of agriculture/veterinary science (usually has a relatively small research component, since education receives primary consideration); and
- private commodity research organization (commonly funded largely, or entirely, by commodity-oriented farmer or commercial organizations).

An efficient and cost effective NARS calls for coordination among the various components. Governments address this problem in various ways. Some seem to tacitly leave the coordinating role to the research department/division of the ministry of agriculture, since typically it is the largest component and the focal point of government support to agricultural research. In practice, coordination by this procedure often tends to be quite informal and ineffective. The fact that many, if not most, of the scientists in the research department/division are graduates

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1/ A national agricultural research system is understood to consist of those public and private organizations within the country that plan, coordinate and implement agricultural research.

Table III-1. National institutions that undertake or coordinate agricultural research

| Country | Research Institutions | | | | | |
|---|---|---|---|---|---|---|
| | National Science Council | Agricultural Research Council/Corporation | Research Division Ministry of Agriculture | Faculty of Agriculture | Faculty of Veterinary Science | Private Research Bodies |
| Angola | | | X | X | | |
| Botswana | | | X | 1/ | | |
| Lesotho | X | | X | 2/ | | |
| Malawi | X | | X | X | | X |
| Mozambique | | | X | | X | |
| Swaziland | X | | X | | | |
| Tanzania | X | X | | X | X | X |
| Zambia | X | | X | X | 3/ | |
| Zimbabwe | | X | X | X | X | X |

1/ Botswana is planning to start a faculty of agriculture in the near future.

2/ Lesotho is planning to start a faculty of agriculture in the near future.

3/ Zambia is planning to start a faculty of veterinary science in the near future.

of the faculty of agriculture, sets the stage for at least informal person-to-person cooperation and coordination among these two components of the national research system.

In a more formal approach, some countries have addressed the need to coordinate the components of national research, and more specifically of agricultural research, by establishing autonomous or semi-autonomous national science councils or agricultural research councils. Their effectiveness in coordinating the overall national agricultural research system is related to their ability to allocate, or have allocated, funds that encourage cooperative research.

National coordinated commodity research programmes, if operated properly, serve as excellent mechanisms for drawing together efforts of the specialists in the various components in the NARS.

With few exceptions, the Team concluded that within country coordination of agricultural research needs strengthening. Regional cooperation and coordination will depend, to a considerable extent, on how well countries handle their opportunities for interaction among the components of their own national research systems. This is one way that a country can strengthen its own agricultural research without having to seek external financial resources.

B. Among SADCC countries

With the weakening of the Southern African Regional Commission for the Conservation and Utilization of the Soil (SARCCUS), to which most of the SADCC countries belonged, cooperation among the countries in agricultural research systems has been on an informal basis only. A common means of cooperation is in exchange of animal and crop germplasm (Table III.2). However, concern was expressed by some countries about plant breeders' rights in Malawi and Zimbabwe which preclude free exchange of crop varieties.

Table III. 2. Examples of exchange of animal and crop germplasm

| Countries | Type of Germplasm |
|---|---|
| Botswana and Zimbabwe | Groundnut and maize |
| Lesotho and Malawi | Beans |
| Lesotho and Zimbabwe | Maize and wheat |
| Malawi and Zambia | Sorghum, wheat, and sunflower |
| Malawi and Zimbabwe | Tea (clonal material) |
| Mozambique and Swaziland | Soya bean |
| Swaziland and Zimbabwe | Tobacco and cotton |
| Swaziland and Zambia | Sorghum and wheat |
| Tanzania and Zimbabwe | Dairy cattle (animals) |
| Tanzania and Zambia | Sunflower |
| Zambia and Zimbabwe | Cattle semen, soya bean |

There has also been informal exchange of visits between agricultural research scientists within the SADCC countries. For example, Malawi and Tanzania have alternately hosted cereals conferences, and scientists from other SADCC countries, as well as from outside of it, were invited. Recently, an animal breeder from Botswana was invited to Zanzibar (Tanzania) to advise on beef cattle breeding.

There is a useful example of regional research in the form of the Tea Research Foundation of Central Africa based in Malawi . Zimbabwe is a paying member and negotiations are in progress with Mozambique. There has been a corresponding relationship between Zambia and Zimbabwe, and Malawi and Zimbabwe, in tobacco research, centering around the Zimbabwe Tobacco Research Board.

Now, the national directors of agricultural research and chief research officers meet regularly as a CTC for Agricultural Research. This provides a forum for dealing with matters of common interest to several or all of the SADCC countries. The Team noted that support for these meetings is provided by USAID through the Government of Zimbabwe (the Food Security Programme of SADCC) which restricts the venue to that country. Further, this support is of limited duration.

The Team learned that consideration is being given to a regional association of deans of faculties of agriculture and veterinary science. This seems desirable and should be looked at in the context of the CTC for Agricultural Research. These faculties are important components in national agricultural research systems - both in terms of research and, more importantly, as a source of scientists for the other research components - and should be involved in regional cooperation. The Team was impressed by plans for cooperation in research between the faculties of agriculture of the Universities of Zambia and Zimbabwe.

Publications play a minor role in regional interaction and cooperation in agricultural research. There is only one agricultural scientific journal of note - the Zimbabwe Journal of Agricultural Research. While it is widely recognized internationally (distributed to 59 countries), its contributors within the SADCC region are largely limited to Zimbabwe.

## C. Between SADCC countries and external research institutions and donor agencies

Many donor countries, agencies and international organizations support agricultural research in the SADCC countries. The international agricultural research centres which cooperate with the SADCC countries include: IITA, ILCA, ICRISAT, CIMMYT, IRRI, CIAT, CIP, ICARDA, AVRDC, and IAEA.

The donor organizations and countries which support agricultural research include: CIDA, IDRC, SIDA, NORAD, SAREC, IFS, USAID, USDA, FAO, UNDP, ODA, the World Bank, The Ford Foundation, The Rockefeller Foundation, WHO, IFAD, ISNAR, the Netherlands Government, Belgium Government, French Government, INTA of Argentina, the Yugoslav Maize Research Institute, and the Cuba Agricultural Research Institute.

While the level of interaction between SADCC countries and external research and donor agencies is commendable, the Team gained the impression in most countries that interaction among the external research institutions vis-a-vis the region left much to be desired. The same situation is observed with respect to the numerous donor agencies.

CDA, described in Chapter I, could become the major long-term external financial supporter of agricultural research in the SADCC region. The Team had an opportunity to interact with a member of a CDA-related team which was dealing with the strengthening of agricultural research in the region. It is noteworthy that a SADCC/CDA committee has been established to develop an inventory of agricultural research in the region, and to outline plans for a long-term cooperative research program.

# IV. Views on strengthening cooperation

## A. General

As a result of discussing the subject with officials in the nine countries, the Team sensed a general, strongly-held view on the need for improved cooperation in agricultural research among the SADCC countries. Behind this view was a recognition of the need to strengthen the individual national agricultural research systems, and a feeling that this could be accomplished by making better use of research resources (scientists, improved genetic materials, facilities, etc.) in the various countries, for the common good of the region.

The feeling was also expressed in most countries that cooperation among countries could result in a much more effective utilization of inputs from external agricultural institutions and donors, who are assisting specific countries in agricultural research in the region. In other words, a regional approach to common problems could result in more effective utilization of research institutions such as the international agricultural research centres, and financial support from donors, such as CDA.

## B. Need for a regional agricultural research cooperation centre

One way to address the interest in better regional cooperation in agricultural research is to establish a centre explicitly for that purpose. The Team itself considered briefly, but discarded, other possible mechanisms to encourage regional cooperation. These included a regional agricultural research council, and a regional agricultural research cooperation committee. The question was also asked as to whether the CTC for Agricultural Research itself might not handle the responsibility. In conclusion, the Team agreed with the Government of Botswana and the CTC for Agricultural Research that a centre charged specifically to encourage cooperation appeared to be the most appropriate mechanism.

The important consideration, however, was the attitude of the member states about a centre for cooperation in agricultural research. The majority of national research and university staff with whom the Team discussed a centre were in favor of the idea. It should be stated, nevertheless, that this opinion was not unanimous; some were skeptical, at least to the extent of expressing some doubt that the centre would be able to carry out the suggested activities. They felt, however, that if a centre could really function, as envisaged by suggested activities listed in the terms of reference for this study, then it indeed would fill a felt regional need.

## C. The role and functions of a centre

Prior to visits to individual countries, the Team "synthesized" a checklist of suggested centre functions, as derived from the terms of reference for the study. The checklist, given below, was used in

discussions with scientists and administrators at the country level. At the same time, those contacted in the countries were encouraged to suggest revisions or even deletions in the checklist, and to state additional functions that, in their view, would be appropriate for a centre for cooperation in research.

The checklist of possible centre functions used by the Team was as follows:

1. Maintain up-to-date records of agricultural development and research policies, production targets and reviews (for assessment of adequacy of available technology and research support).

2. Maintain an inventory of agricultural research workers, research projects and resources for research (for assessment of research systems capability to meet national agricultural development goals and promote inter-country cooperation).

3. Assist with the reviews, at regular intervals, of national and international research programs in the region (for strengthening the programmes and identification of resources required).

4. Promote continuous and rapid interchange and utilization of technical and scientific information by:

   (a) Technical journal and newsletter

   (b) Regional meetings/conferences/workshops/seminars of a specialist or general nature

   (c) Exchange of visits by specialists, scientists and technicians.

5. Promote and facilitate concerted studies of problems common to several or all countries, and the initiation of coordinated, cooperative solutions of such problems.

6. Promote cooperation in training and career development of scientific and technical personnel (to meet research needs at national and regional level).

7. Encourage free exchange and cooperative evaluation of plant and animal germplasm and improved material (crop variety trials, regional germplasm collection, evaluation and storage, semen exchange).

8. Promote effective interaction with the International Agricultural Research Centres and similar organizations interested in working in the region.

In general, the persons contacted in the nine countries agreed with the checklist of possible activities. Two countries expressed reservations about providing fiscal data about their research systems for the suggested inventory of agricultural research workers, research projects and resources

for research. Thus, the Team concluded that the checklist formed a sound basis for characterizing the role and functions of a regional coordination centre.

In addition to the checklist, other items were suggested as possible activities of the centre. In some cases, these are derived from the somewhat broader categories in the checklist. These other suggestions include:

1. A service role of the centre

   - in promoting uniform criteria for seed laws and regulations, and of laws and regulations affecting exchange of plant and animal germplasm, including quarantine;

   - as an early warning headquarters for outbreak of plant and animal pests and diseases;

   - in promoting compilation and utilization of existing meteorological records;

   - in producing handbooks on various topics such as on identification of major pests and diseases of the region; and

   - in maintaining records of bilateral regional and country projects and donors.

2. A coordinating role of the centre

   - in relation to regional research projects, e.g. the three involving ICRISAT (mentioned earlier);

   - with respect to donor inputs in regional projects;

   - with respect to regional activities of international research and research support organizations and agencies;

   - in developing a list of priority regional research and training problems to put before governments and donors; and

   - in assisting universities to strengthen training in agricultural sciences.

Thus, it is seen that the centre would have two basic categories of functions: one of a service nature in which the centre had the direct responsibility for taking the initiative and handling directly (e.g. a research journal) or promoting (e.g. establishment of plant quarantine); the other of a coordinating nature - facilitating and promoting activities managed by other organizations, but not having primary responsibility for them (e.g. the three regional research projects involving ICRISAT). While this categorization of major divisions of functions is useful, it should not be viewed as hard and fast.

## D. A professional organization of agricultural scientists

In its terms of reference, the Team was asked to assess the feasibility and likely benefits from the formation of a regional professional organization of agricultural researchers, and what, if any, association such an entity should have with a regional coordination centre.

The CDA reconnaissance team which visited all the SADCC countries (except Angola) in March/April 1983 recommended the formation of a professional society of agricultural and livestock scientists as one way of promoting regional cooperation in agricultural research. While the Team is convinced of the vital role that such an organization could play in regional cooperation, the experience of the Association for the Advancement of Agricultural Sciences in Africa (AAASA) and other national scientific associations in the region is that such voluntary organizations are hardly recognized by governments and therefore lack the essential support to make them viable institutions at this time.

The Team believes that the holding of regular workshops, seminars and meetings of scientists will fulfill the role that an association could do in promoting regional cooperation.

## E. Possible contributions of individual countries to regional cooperation

A basic principle in successful regional cooperation is the exploitation of sources of strength within the individual countries of the region for the common good. In the SADCC region, as in all others, individual national agricultural research systems have relative strengths, and thus are in a position to assist the other countries in the region. The Team made a point of trying to learn what countries felt were their strong points in research. These are tabulated as follows:

| Country | Area of strength |
|---|---|
| 1. Angola | - no area of strength |
| 2. Botswana | - development and testing of ox-drawn equipment or machinery for small farm use in semi-arid areas<br>- crop water use efficiency<br>- cattle breeding and range management<br>- farming systems research |
| 3. Lesotho | - farming systems research<br>- temperate climate fruits and vegetables |
| 4. Malawi | - pasture legumes<br>- tea<br>- plant quarantine<br>- seed technology<br>- on-farm storage |

| Country | Area of strength |
|---|---|
| 5. Mozambique | - soil survey and agro-ecological zoning |
| 6. Swaziland | - farming systems research<br>- vegetable production |
| 7. Tanzania | - oilseeds, research<br>- tsetse fly control<br>- sugarcane breeding<br>- tropical pesticides research<br>- cotton research |
| 8. Zambia | - soybean improvement |
| 9. Zimbabwe | - legume microbiology<br>- sub-tropical legumes<br>- tobacco<br>- animal breeding<br>- crop breeding<br>- seed certification |

Clearly, these are strengths in a wide range of research or research supportive subjects which can figure importantly in the development of regional projects.

# V. The establishment of a Southern African Center for Cooperation in Agricultural Research (SACCAR)

## A. General considerations

The Team is convinced that there is need and a general desire for a regional centre to promote cooperation in agricultural research. The rationale for cooperation is based on: a) The desire of each Member State to build its own strong national agricultural research system; and b) the recognition that areas of strength exist within present research activities which could and should be utilized for the benefit of all Member States. A centre is seen as the most effective mechanism to maximize the region's areas of strength in the common good, and to permit better utilization of external funding and technical inputs to agricultural research in the region.

The centre is conceived as basically a nucleus to encourage cooperation and coordination[1/], to provide a range of direct services, deemed important by agricultural scientists in the nine countries.

Keeping in mind the nature and role of the proposed centre, the Team also gave some attention to a name for it. With the intended emphasis on cooperation and coordination, the Team suggests: "Southern African Centre for Cooperation in Agricultural Research", or, in short, "SACCAR".

In accordance with the philosophy of SADCC, the Team envisages a SACCAR of modest proportions, in terms of staff and facilities. It seems important to keep in mind the desirability of participant countries assuming full responsibility for SACCAR in due course. It is recommended that countries seriously consider supporting the costs of SACCAR from the outset, by subscribing, say, 25% of the budget in the first year, to be increased appropriately in succeeding years. Possibly, some of the funds currently contributed by some Member States to SARCCUS could be diverted to support SACCAR. Support by Member States will be enhanced if the Centre is kept small, and is recognized as having real value to the agricultural research systems of the countries.

## B. Organizational relationships

The following organigram (V-1) shows the basic relationship of SACCAR, as understood by the Team, to the various elements of SADCC, the Government of Botswana, the CTC for Agricultural Research, and IARCs and related research and donor organizations.

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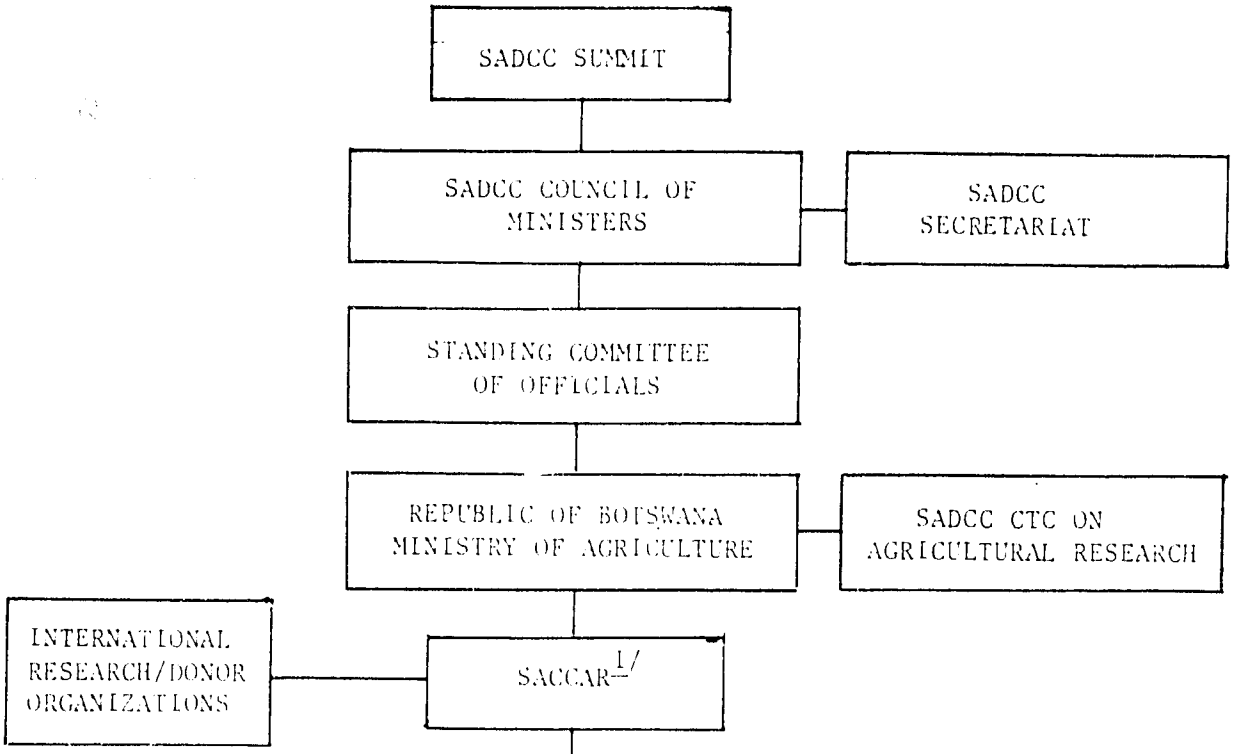
1/ The words "cooperation" and "coordination" were discussed at length by the Team. When used in this report, "coordination" does not mean "directing" or "bossing" by the Centre, in relation to NARS, IARCs, donors, etc. Rather, it means taking a leading role in facilitating and catalyzing interaction to achieve mutually agreeable decisions and programs.

Table V-1. Organizational relationships and functions




| SERVICE FUNCTIONS | COORDINATING FUNCTIONS |
|---|---|
| 1. Secretariat for and support to CTC | With: |
| 2. Documentation on research and development policies, etc. | 1. External research institutions in regional research |
| 3. Research inventory | 2. External donors involved in regional research |
| 4. Research program reviews | 3. Other external organizations involved (e.g. regional or international associations) |
| 5. Publications | |
| 6. Studies, workshops, etc. on common problems | |
| 7. Manpower training and career development<br>- regional travel<br>- small research grants<br>- training workshops<br>- assessment studies | |
| 8. Others (e.g. germplasm exchange, biometric support) | |

1/ Southern African Centre for Cooperation in Agricultural Research.

The formal access of SACCAR to other SADCC entities would be through the Government of Botswana - normally the Ministry of Agriculture. It is noted that SACCAR would have a rather remote relationship with the SADCC Secretariat, which is an administrative unit to serve SADCC Heads of State (the SADCC Summit), the Council of Ministers, and officials (Permanent Secretaries).

SACCAR would relate directly to the CTC on Agricultural Research, and the working relationship would be expected to be very close. It is recommended that SACCAR serve as the Secretariat for the CTC, and provide the necessary support for its periodic meetings. It is envisaged that the CTC, together with the Botswana Ministry of Agriculture, will be directly responsible for the management of SACCAR.

Further, SACCAR should have direct relationships with individual national agricultural research systems, normally through the director of research, dean of the faculty of agriculture, veterinary science, etc. The Team recommends that the director of SACCAR be a member of the CTC for Agricultural Research, and participate fully in all of its meetings.

Correspondingly, SACCAR should have direct links with IARCs and related research entities, donor organizations, and professional agricultural associations. This is not to suggest that ultimately such groups would not have to work through individual governments, or higher SADCC units to formalize their cooperative programs. SACCAR would be expected to facilitate and support their relationships with the NARSs of the countries and with the region as a coherent unit.

SACCAR should develop working relationships with OAU/STRC, AAASA and IFARD insofar as these organizations have research interests and activities in the SADCC region. The Team anticipates that they would find it advantageous to use SACCAR as the point of contact with the region in matters relating to agricultural research.

## C. Activities

As mentioned previously, SACCAR would have two basic functions: one service and the other cooperation (see Organigram V-1). While there would be some overlapping, this categorization seems useful to delineate the activities of the Centre.

### 1. Service

In this role, SACCAR would have a direct responsibility for specific services to be provided to the various components of SADCC (e.g. Food Security Programme, CTC for Agricultural Research), Botswana Ministry of Agriculture, NARCs, external research institutions and external financial assistance organizations. The principal categories of such services are shown in Organigram V-1.

(a) Secretariat for the CTC for Agricultural Research

SACCAR should serve as the Secretariat for the CTC for Agricultural research, and have in its budget funds for its meetings. This arrangement would replace the ad hoc one which now commits all CTCs to meet concurrently in Zimbabwe. The present arrangement is one of convenience, but is inconsistent with the projected working relationship between SACCAR and the CTC for Agricultural Research.

The Team is concerned that meetings of the CTC for Agricultural Research to date may not have adequately represented the national agricultural systems. Specifically, the Team recommends that deans of faculties of agriculture and veterinary medicine participate once per year with the directors of research. Not only do these faculties constitute important components of the national research system, they are the source of manpower for the systems themselves.

Further, care should be taken to ensure reasonable representation from time to time at the CTC for Agricultural Research meetings of scientists from the private sector side of national agricultural research system (e.g. possibly someone from the Tobacco Research Board of Zimbabwe). The Team recognizes, however, that the national director of research usually sits on the commodity research boards, and thus may be their representative on the CTC for Agricultural Research.

(b) Up-to-date documentation on agricultural research and development policies, plans and targets

The purpose of this activity is to provide the basis for an awareness (by the SACCAR and its clients) of national and regional plans, targets and programs for agricultural research and development. This basis of awareness, in turn, is for the purpose of being able to assess the adequacy of technology and current research efforts in relation to requirements to meet national and regional agricultural development goals.

SACCAR will be expected to obtain from each Member State the most recent plans for agricultural development (including recent agricultural sector studies, such as those made by the World Bank and USAID). Correspondingly, it will obtain key regional and national documents on agricultural research. It will also obtain SADCC documents (particularly from the Food Security Program) bearing on food production, storage, processing, etc. The important point is to maintain current information of current value. An effort must be made to avoid building up a large repository of outdated, irrelevant material.

These documents would be available, as needed, to SACCAR staff, CTC for Agricultural Research, IARCs (and related organization), donors and consultants.

SACCAR should not plan to establish a library per se in its own facilities, but should work out arrangements with the College of Agriculture, or the University of Botswana, for shelf space, catologuing, etc. The Team understands that the University has already started a collection of SADCC documents.

(c) Maintenance of an up-to-date inventory of national and regional research systems

The purpose of this activity is to provide a sound basis for assessing capabilities of national and regional research in respect of the needed research inputs to develop the technology required to meet national and regional development targets. This would include manpower resources, (including training programs), projects, and support for research. In a real sense, this activity is a complement to "a" above, or vice versa.

SACCAR will be expected to continue the computer-based research inventories that will be made by the SADCC/CDA teams. Relevant information should also be available from the SADCC Manpower Program (Swaziland) and the related study on technical manpower in agriculture planned by the Food and Security Program (Zimbabwe).

This planned research inventory is highly related to the FAO Current Agricultural Research Information Service (CARIS), and can benefic from its experience (e.g. in information forms) as well as consultant assistance. One member of our Team had an opportunity to discuss the proposed inventory service of SACCAR with CARIS officials in Rome. The Team recommends that the CDA/SADCC team(s) interact with CARIS in developing detailed plans for inventory forms and programs. It should be noted that some of the SADCC countries are currently participating in the CARIS and AGRIS programs.

SACCAR, in taking over the inventory from SADCC/CDA, will be responsible for:

(i) maintaining the inventory current on a yearly basis;

(ii) providing printout information on request to appropriate persons (national researchers, SADCC officials, e.g. Food Security Programme, and donor organizations, especially CDA country representatives).

It is seen that the computerized data on research in the region, coupled with complementary information in item "a" above, will be used to identify needs for:

(i) concerted studies of regional problems;

(ii) workshops, seminars, etc;

(iii) determination of areas of research deficiency of a regional nature; and

(iv) identification of areas of focus for small research grants.

The micro-computer and stored data will be located at SACCAR headquarters.

This SACCAR inventory is in no sense meant to take the place of research inventories maintained by individual countries. Rather, it will utilize the latter, to the extent feasible and, correspondingly, supplement country inventories as appropriate.

(d) Review of national and international research programs

The purpose of this activity is to assist in strengthening national research programs and, in particular, to seek ways to make regional cooperation more effective.

Centre staff would participate in reviews and evaluations of current and planned regional projects involving the IARCs (such as those currently with ICRISAT and CIMMYT). Further, the Centre will be expected to be represented at appropriate meetings sponsored by SADCC (e.g. Food Security Program, CTC for Agricultural Research) and donors (e.g. CDA). The Centre should endeavour to keep abreast of upcoming meetings so as to publish information about them through a newsletter, and to plan for participation in them.

(e) Publications

The Team recommends a newsletter (SADCC Agricultural Research Newsletter) as an important vehicle for conveying to scientists in the region, and to other interested parties, progress and plans about activities of the Centre, and more broadly, of work to improve regional cooperation in agricultural research. In general, the Newsletter will serve as an information bulletin of news, views, reviews, and notes on current research activities in the region, including such items as highlights of research programs, new crop variety releases and reports of workshops, meetings and upcoming events. The Newsletter should be printed in Gaborone, both in English and Portuguese.

There is no regional journal of agricultural research to permit scientists to publish the growing volume of scientific results of research in the region which are of interest to most or all of the countries. Nor are other publications, e.g. a newsletter, to keep scientists informed about matters of interest.

In response to these needs, the Team recommends that SACCAR publish a Southern African Journal of Agricultural Research (SAJAR), perhaps two times a year initially. There are at least two options. The most desirable one would be to have the ongoing internationally reputable Zimbabwe Journal of Agricultural

Research (started in the 1960s as a regional journal for Malawi, Zambia and Zimbabwe) become the SAJAR. 1/ The other is to have a separate SAJAR, which hopefully will not be necessary.

The Team believes there is sufficient research of a high standard and general interest going on in most of the SADCC member countries to justify a regional scientific journal (e.g. various national research projects, the several FSR projects, the upcoming regional projects involving ICRISAT, etc.)

Assuming the Zimbabwe Journal becomes the SAJAR, probably it should continue to be printed in and distributed from Harare, although there would be at least one advantage in having it printed in Gaborone because of the ready availability of the SACCAR Information/Publications Officer. There are good commercial printing facilities in Gaborone.

The Centre should also produce short-run documents and materials that are needed quickly, such as consultant, workshop and seminar reports, and proceedings.

SACCAR might publish handbooks on subjects of common interest. An example is one on the major pests and diseases of plants and animals of the region.

It will be important to have a regional editorial board, and, wherever possible, international referees. It will also be important to have Portuguese abstracts of articles in English and vice versa. Traditional pressure on Government printing services persuades the Team to strongly recommend that printing be handled in the commercial sector.

A scientific editor may be needed, perhaps on a half-time basis, to complement the work of the regional editorial board and of the SACCAR Information/Publications Officer.

Consideration will need to be given to practical and efficient means for maintaining up-to-date mailing lists and producing labels for both the Newsletter and the Journal.

(f) Studies, workshops, conferences and seminars

The Centre will take a leadership role in promoting, and sponsoring where appropriate, in-depth studies, workshops, conferences, and seminars directed toward common research (researchable) problems of the region. The studies may involve one consultant or a team of consultants. The studies, workshops and conferences may be sponsored by an ongoing regional research project (e.g. sorghum and millet improvement), an IARC (or several of them), by one or more donors, or by SACCAR itself.

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1/ Details on publication, circulation and costs of the Zimbabwe Journal of Agricultural Research are contained in Annex 3-i).

Subjects for in-depth studies, or workshops, will be identified by:

(i) SACCAR,

(ii) workshops,

(iii) the CTC for Agricultural Research (representing national governments), and

(iv) other mechanisms.

Some of the subjects that would benefit currently from workshops are: maize leaf streak virus disease; micro nutrient status of soils and forages in relation to ruminant nutrition (livestock production); management of problem soils; animal powered implements for the small farmer (ox and donkey powered); and diseases of livestock in the SADCC region - their control and treatment.

The Centre, in order to assist in getting the information on common problems, may need to:

(i) employ a consultant, or team of consultants, or

(ii) convene a workshop - possible after the consultant/team report.

An expected outcome of the study/workshops should be a report with a resolution on follow-up action, probably involving plans to prepare a detailed project proposal which would specify objectives, plan of action, division of responsibilities (among countries - scientists), evaluation procedures, human and physical resource requirements, and budget estimates. The Centre would be expected to take a leading role in preparation of the proposal, seeking necessary approvals, and assisting in obtaining funding, including that needed from outside donors. In this way, the Centre will be a useful mechanism for CDA and other donors to channel support to priority agricultural research in the SADCC region.

An important consideration is to make sure countries have opportunities to host meetings. Any temptation to hold most of them at the Centre should be avoided. Proceedings of the meetings should be printed and circulated promptly. This will be an important concern of the proposed Centre Information/Publications Officer. In cases where the Centre is holding the meeting, the proposed Manpower and Training Officer probably will have chief responsibility for arranging the meeting.

(g) Manpower training and career development

Lack of trained manpower in research is a common denominator in the region. The Centre must address this as a core issue and

function. Clearly, the Centre cannot take the place of the country - which has primary responsibility for the training of its personnel - but it can assist.

The Team recommends that the Centre assist in this subject by:

(i) regional travel grants

(ii) small research grants

(iii) training workshops

(iv) assessment studies

In respect of travel grants, the Team has in mind the need for young scientists in the national research institutions and faculties of agriculture and veterinary science in particular, to have an opportunity to avail of expertise from more senior scientists in the region. The Centre can make a valuable contribution to regional research cooperation by enabling scientists to make brief visits for professional betterment, as well as establishment of regional collegial relationships. Thus, this report included proposed budgetary provision for regional visits.[1/]

Some research projects will already have funds for regional travel (e.g. the one in Zambia supported by USAID), and this kind of arrangement by donors is to be encouraged by SACCAR. However, for the foreseeable future, certainly during the next five years, the Centre will need to directly support these visits. In the latter situation, a mechanism will be needed to identify worthy candidates. Probably, the Centre should advertise the availability of such awards, solicit applications (from individuals, or perhaps more appropriately through the institution involved), and then arrange for screening of applications. A subcommittee of CTC for Agricultural Research would be one way to handle selections.

Small research grants, particularly to young scientists and faculty members, for work on problems of broad interest, offer another way to enhance the experience of promising researchers, and to involve them in cooperative activities.[2/]

In some cases, these grants may be designed to obtain data needed to better define a problem of interest to several countries. The results could form the basis for a workshop, and eventually a broader-based research project. An example could be

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1/ The Team has in mind visits of, on the average, two-weeks duration. One or more countries might be visited, as appropriate.

2/ The Team considers a grant of around US$ 10,000 to be the general order of magnitude appropriate for this activity of the Centre.

the enabling of a young scientist to get needed background information on the micro-element content of soils or forages, in relation to ruminant nutrition.

SACCAR can also assist in upgrading the qualifications of research staff through regional training workshops on selected topics. In some cases, they may be sponsored and funded entirely by the Centre, while in others, the Centre may share costs, or merely promote, with expenses being borne by another organization. The Team recommends that SACCAR engage in this line of activity, and has included provision for such in the estimated budget (Chapter VII).

Two topics are suggested as the basis for training workshops: management of agricultural research systems/institutions, and development and management of experiment stations.

There is growing awareness that frequently young scientists are placed in managerial positions with little or no experience in personnel management, project and programme planning and evaluation, and budgeting. Such scientists need opportunities to be exposed to management principles and practices that have resulted from recent experience. In this area of need, SACCAR and ISNAR might profitably collaborate.

The problem of poor field experimentation, a waste of both time and money, is common to several countries of the SADCC region. Many donor agencies spend large sums of money to educate scientists but next to nothing on training people and managing the experiment stations on which scientists work.

The experience of the Indian Agricultural Program of the Rockefeller Foundation during the 1960's showed that provision of good and proper experiment station development and management service improves the quality of research and gives substantial pay-offs in research investment.

One service that SACCAR could provide is training and possibly direct assistance to national programs to improve field research facilities.[1/] SACCAR would identify persons who could work with national programs to develop master plans for station development, assist with survey and engineering input, help identify the proper machinery for land development and subsequently farming, help establish maintenance and repair units, help establish farm records, and help organize an effective farm operations committee including the farm manager/superintendent. This would be an important contribution in upgrading the quality of field research.

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1/ ICRISAT and INTSORMIL (International Sorghum and Millet - a CRSP) propose to have as a member of a 7-member team in the region, a specialist in research station management. SACCAR should explore the possibility of using this part-time specialist in regional training workshops, and in assisting individual countries.

SACCAR can also make a contribution to the manpower career development needs of the region by pinpointing specific areas of greatest priority. This can be done, in part, through the up-to-date research inventory. Further, relevant information will be forthcoming through the SADCC Manpower studies (Swaziland) and the project of the Food Security Program on technical manpower in agriculture. SACCAR should become increasingly able to identify and quantify manpower needs in agricultural research of the region.

(h) Other possible activities

SACCAR may, and likely will, become involved in additional service activities. A number of these, noted below, came to the attention of the Team, for the most part, as suggestions made by scientists interviewed during the country visits.

(i) Exchange of plant and animal germplasm

SACCAR should encourage free exchange and cooperative evaluation of plant and animal germplasm to permit more rapid evaluation and utilization of regional and introduced germplasm. This can be accomplished by encouragement of: (1) establishment of cooperative regional crop variety trials; and (2) cooperative regional germplasm collection, evaluation and maintenance (in specific countries for specific crops, or at the coordinating centre for each regional research project, e.g. groundnuts in Malawi). These should be in collaboration with the IBPGR and the IARCs.

The Centre should not have direct responsibility for trials or germplasm collection, evaluation and storage. Rather, it should encourage and promote cooperation among the SADCC countries. The regional crop research programs should have direct responsibility for the trials and germplasm of their crops. For other crops, the Centre could convene meetings of concerned research workers to organize and evaluate regional trials.

(ii) Seed

In anticipation of the movement of seed between countries (as already exists between, say, Zambia, Zimbabwe and Malawi), the Centre should assist in the development of uniform standards for seed certification, and uniform requirements in national seed laws related to truthful labeling. Uniformity in quality control would expedite seed movement between countries in the region. The possibility of producing seed in one part of the region and marketing it in another can be valuable and should be encouraged.

The Centre could monitor the availability of seed stocks, especially of breeders' seed for multiplication when and where needed.

(iii) Quarantine

Related to free exchange of germplasm and seed movement between countries is the problem of quarantine. The Centre should contribute to the development and updating of quarantine procedures for countries in the region in collaboration with the OAU/STRC Inter-African Phytosanitary Commission and the FAO. This would include knowing what insect, disease, and weed problems are a threat, whether they are seed-borne, and if there are control measures to protect materials introduced from areas of concern. Assistance in the establishment of a regional quarantine unit would be a worthwhile Centre activity.

(iv) Biometric support

To facilitate the processing of national research data and to improve experimental design and techniques, the Centre should investigate the possibility of support to an existing national system so that it can serve the region, e.g. the biometrics centre in Malawi.

The support could take the form of a consultant who would conduct one or more training workshops on the design and analysis of experiments, with emphasis on the use of micro-computers for processing of data.

(v) Early warning headquarters

The Centre could serve as the early warning information headquarters for outbreaks of plant and animal pests and diseases in the region, excluding locust and other migratory pests covered by another organization. However, it should maintain close liaison with centres also working on those pests.

To this end, through the CTC for Agricultural Research, national correspondents might be appointed to keep the SACCAR informed of outbreaks. The Centre in turn would disseminate this information in the region. This would be particularly important for spread of new and recently introduced major pests.

(vi) Agro-meteorological support

The Centre might promote the assembly and analysis of the available meteorological data in each SADCC member country to provide the national and regional research efforts with a better description of the climates. This is essential for the development of new crop varieties for conditions representative of the long-term climatic patterns of the areas where they are to be grown. This is particularly important, considering the oscillations in rainfall patterns that occur in the region.

## 2. Cooperation

In this category of functions, SACCAR would play a facilitating and supporting role, rather than having direct responsibility for the activities. It would cooperate with, and assist in, the coordination of activities within the region of a number of institutions.

### (a) Research institutions

First, this role would relate to external research institutions working in the region. As one of its major functions, SACCAR could be expected to promote, facilitate and cooperate in the development and operations of regional agricultural research projects. The IARCs are an example. ICRISAT is in the process of working out, through the CTC for Agricultural Research and individual countries in the region, arrangements for three cooperative research projects mentioned earlier.

The regional research teams would, however, be directly responsible for their areas of research and development. They would call upon SACCAR for participation, as required, and vice versa. External reviews of the regional projects and the annual workshops for discussion and planning of the research programs could be organized in collaboration with SACCAR. The regional research teams would also interact directly and freely with national programs and with SACCAR scientists.

Other IARCs and related external research organizations (e.g. CRSPs) are, or will be, involved in research in the SADCC region. SACCAR, when fully operational - with its current inventory of research data for the region - should be the facilitating and coordinating agent for such institutions. It would not tell an IARC nor a CRSP how it must operate in the region, but would play a leadership role in: (a) providing external research institutions with needed information, and (b) facilitating interaction with the CTC for Agricultural Research and the individual NARSs. The Team sees SACCAR becoming a centre of information, communication and facilitation, the services of which will be sought by external research institutions.

### (b) Donors

It is also envisaged that SACCAR will become the focal point of contact for external funding agencies interested in supporting agricultural research in the region, particularly that of a regional nature. Not only will SACCAR be able to assist an individual donor in making a more informed decision about support to research, but it will be in a position to help coordinate assistance from two or more donors.

SACCAR would play a leadership role in seeking funding for regional projects and for coordinating donor input, including the activities of the international agricultural research centres of

CGIAR and other international agencies. In general, SACCAR would brief outside organizations and inform them on research priorities for the region.

SACCAR should be viewed as a key element in the strategy and program of CDA and other donors, with respect to long-term support for agricultural research in the SADCC region. The Team strongly recommends that CDA and other donors support and work through SACCAR in developing and implementing its research support program. Correspondingly, SACCAR must keep in mind its responsibility to all donors in providing expertise, experience and information that donors will need to draw on to develop their programs.

(c) Other organizations

Finally, SACCAR would have a coordinating function with respect to other external organizations (e.g. professional associations and organizations) that have an interest in, or can make a contribution to, research in the SADCC region. The Team envisages SACCAR as being the regional focus for interactions in matters of research with organizations such as OAU/STRC, AAASA and IFARD.

## D. Staff

### 1. General

The Team recommends appointment of three professional staff members[1/], assisted by an administrative/accounts officer, and support staff in the form of secretaries, a typist, a driver/general assistant, and a cleaner/messenger. This initial staffing is based on the proposed functions of the Centre, and takes into account the philosophy of SADCC, which includes the avoidance of building unnecessarily large

### 2. Duties, qualifications and reporting

The professional staff would consist of a Director, a Manpower and Training Officer and an Information/Publications Officer. continuing organizations in support of its activities.

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1/ The Team has noted suggestions by national research staff during its discussions that the staff of the Centre should include two agricultural scientists, one each in the plant and animal sciences. However, the Team believes that the appointment of only one agricultural scientist is advisable in the initial phase, with a review of staffing to be undertaken two years after the establishment of the Centre. The appointments of senior staff could be on secondment from within the SADCC countries.

(a) Director

Duties:

The Director should be responsible to the Ministry of Agriculture, the Government of Botswana, and to the CTC for Agricultural Research for the performance of the following duties:

- Overall responsibility for management of the Centre and its activities;

- Responsibility for supervision of Centre staff;

- Development of close working relationships with: the Government of Botswana (Ministries of Agriculture and of Finance); the CTC for Agricultural Research; the SADCC Secretariat; the SADCC Agricultural Programmes; the external assistance organizations, including CDA member representatives; and with the IARCs and corresponding research institutions outside of the region;

- Gaining a comprehensive familiarity with ongoing and prospective agricultural research projects and activities of a regional nature in the SADCC region;

- Preparing and being responsible for the Centre budget; and

- Other duties, as may be required to fulfill the role of Director of the Centre.

Qualifications:

- A degree of Doctor of Philosophy (or its equivalent) in some discipline of agricultural science;

- International recognition as a competent scientist in his own right with a minimum of 10 years of research experience supported by refereed publications;

- Experience and proven effectiveness and success in the administration of agricultural research programs, such as being director of national agricultural research;

- Experience in regional or international agricultural research; and

- If the language of education is English, a fluency in Portuguese; or, if the language of education is Portuguese, a fluency in English (highly desirable, but not a requirement).[1/]

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1/ The Team strongly recommends that either the Director or the Manpower and Training Officer should have Portuguese as the native language, with a fluency in English as a second language.

(b) Manpower and Training Officer

Duties:

The Manpower and Training Officer will be responsible to the Director for the performance of the following duties:

- Primary responsibility for promotion of training and career development, which will include arrangements for: (a) regional meetings, workshops and conferences; (b) regional travel grants; and (c) small individual grants for research of a regional nature; and training programmes;

- Compilation of regional and national plans for agricultural research and development, including production targets; assessment of natural and human resources for agricultural development, research reviews and reports, and related information;

- Maintenance of current computer-based inventories of information on national agricultural research systems of the region; and

- Other duties, as may be assigned by the Director.

Qualifications:

- A degree of Doctor of Philosophy, or its equivalent, in some discipline of agricultural science;

- A minimum of three years of commendable experience as an officer responsible for training, conferences, workshops, administration study/travel grants in the field of agricultural research;

- Experience in handling a computer-based data base;

- Regional or international experience in the administration of training; and

- If the language of education is English, a fluency in Portuguese; or, if the language of education is Portuguese, a fluency in English (highly preferred, but not required).

(c) Information/Publications Officer

Duties:

He will be responsible to the Director of the Centre for:

- Primary responsibility to promote continuous and rapid interchange and utilization of technical and scientific information among scientists in the region;

- Publication of a periodic newsletter;
- Publication of a regional journal of agricultural research;
- Other such activities in keeping with his responsibilities as Information/Publications Officer.

Qualifications:

Qualifications include the following:

- A minimum of B.Sc., and preferably an M.Sc degree, in a relevant subject;
- Experience as an editor or information/publications officer in an agricultural research institution;
- Preferably experience in a regional or international agricultural research institution;
- Language of education English and, preferably, fluency in Portuguese.

(d) Administrative/Accounts Officer

Duties:

He will report to the Director of the Centre and be:

- Responsible for day-to-day administration of the Centre (accommodation, material, management, printing, furniture, purchasing);
- Make arrangements for selection and appointment of support staff such as secretaries, typists, drivers and messengers;
- Keep all accounts for the Centre;
- Maintain a petty cash account;
- Arrange for travel;
- Prepare cost analyses of Centre activities;
- Other responsibilities attendant to his position as Administrative/Accounts Officer.

Qualifications:

- Training in business administration, or a related field, to the level of B. Admin., or the equivalent;
- Experience in the maintenance and operation of accounts;

- Experience in handling administrative responsibilities and accounting in an organization of comparable size and complexity to that of the Centre; and

- A person whose language of education is English, and, preferably, with a fluency in Portuguese.

3. Appointment Conditions

The position of Director, Manpower and Training Officer, Information/Publications Officer, and Administrative/Accounts Officer should be advertised throughout the nine SADCC countries, and also by searching for suitable candidates and encouraging them to apply. Secondment from national institutions should be considered as an option. Recruitment should be from within the region if suitable candidates are available. If not, recruitment from outside of the region may be necessary, until qualified candidates from within the region are available. In order to get the combination of professional qualifications, coupled with Portuguese as a mother tongue, in at least one of the professional staff, it may be necessary to identify candidates from outside countries, such as Brazil and Portugal.

The four above-noted officers should be appointed by the Government of Botswana, after first vetting the candidates with the other SADCC country governments (CTC for Agricultural Research). The appointments should be for three years, in the first instance, with a review for possible reappointment for a like period.

4. Support Staff

Support staff will be appointed by the Director of the Centre. To the extent possible (based on availability of qualified candidates), support staff will be recruited from within Botswana.

5. Terms and Conditions of Appointment

The Team recommends that the terms and conditions of appointment prepared for staffing of the SADCC Secretariat be used as guidelines, with suitable modifications, for staffing of the Centre. These terms are contained in Chapter VI of the document entitled "Southern African Development Coordination Conference: Record of the Council of Ministers", 18 November 1981. This extract from the document is appended in Annex 5.

6. Salaries for International Staff

Salaries of the three international staff should be pegged at a level to attract and retain persons of eminence and proven effectiveness and efficiency in the fields specified. In arriving at salary levels, for the purpose of budget estimates, the Team has taken Government of Zimbabwe salary scales (currently the highest in the region) as a basis. The reasoning was that to attract qualified staff from within the region, salaries would have to be at least as high as

those for comparable positions within the countries, including the one with the highest salary scales. Then, recognizing the international nature of these posts, the Team added 10% to the appropriate Government of Zimbabwe salary scales to arrive at base salaries for the four international staff members of the Centre. This adjustment is consistent with that made for foreign service by the SADCC Secretariat.

If it becomes necessary to recruit outside of the region, basic salary levels and most of the benefits may be as much as 75% to 100% higher than those used for recruitment within the region. These higher figures reflect typical situations in recruitment by international organizations such as the World Bank, IARCs and consulting firms in international agriculture.

7. Immunities and privileges

The Team recommends that the international staff of SACCAR enjoy in the territories of Member States such privileges and immunities as are necessary for the fulfillment of their functions.

## E. Location

The Team has taken as given that the Centre will be located in Gaborone, and thus has looked at the specific location in that context.

There are two reasonable options. The first is to have SACCAR based in the proposed facilities for the SADCC Secretariat, which currently are in the planning stage. The second is to locate SACCAR at Sebele, at the Agricultural Research Station and College of Agriculture, on the outskirts of Gaborone.

There would be some advantages in housing SACCAR in the SADCC Secretariat facilities: the timing is such that plans for the needs of SACCAR could be incorporated by the architect into the plans for the SADCC building, and SACCAR would have access to important facilities in the building such as conference rooms, duplication equipment and communications (e.g. telex). On the other hand, SACCAR would have virtually no functional relationship to the SADCC Secretariat which, as noted earlier, is responsible for serving the SADCC Summit, Council of Ministers, and the Standing Committee of Officials. SACCAR reports through the Botswana Ministry of Agriculture on administration and operational matters.

At Sebele, SACCAR would be at the Agricultural Research Station and College of Agriculture. The Team, and those questioned about location during the country visits, unanimously felt that having SACCAR in a research station setting is preferable. At Sebele, it will be necessary to construct a building for SACCAR offices and related facilities, just as it is necessary to construct the building needs for the SADCC Secretariat in Gaborone. Costs of construction of the facility could be somewhat higher at Sebele as contrasted to those of "adding on" to the planned SADCC Secretariat building. On the other hand, they may be lower at Sebele, depending on the nature of construction in relation to that proposed for the SADCC Secretariat. In either case, the Team believes the advantages of

having SACCAR at Sebele outweigh those of including ic in the SADCC Secretariat one, and, therefore, recommends that SACCAR be headquartered at Sebele.

It may be appropriate at this point to voice concerns of the Team about the importance of accessibility of SACCAR to member countries, and vice versa, through travel and telecommunications. The Team is pleased that a new international airport is under construction which, when completed, is expected to substantially enhance air travel between Gaborone and other capital cities in the region. The Team also understands that improved telephone service is in the offing at Sebele. The present situation is not satisfactory. Finally, the Team wishes to emphasize the importance of telex facilities at SACCAR headquarters, and accordingly has provided for them in the budget estimates included in this report. The Agricultural Research Station and the College of Agriculture would share the telex facilities.

## F. Physical Facilities

The acute shortage of housing and, to a somewhat lesser extent, of office space in Gaborone, necessitates construction of both for SACCAR requirements.

In proposing office accommodation, the Team was mindful of the philosophy of SADCC to avoid unnecessarily large and expensive infrastructure, and accordingly has proposed a modest facility at Sebele. A building with low upkeep requirements is envisaged, which will consist essentially of offices for the international professional staff, support staff, and visiting scientists, a small conference room (for 10-12 persons), and space for storage, duplication and printing, and computer-based inventory work. Requirements for regional conferences, workshops, etc. held in Gaborone would be handled through arrangements with organizations in the vicinity having such facilities (e.g. the College of Agriculture, University of Botswana, SADCC Secretariat, and hotels). Correspondingly, a library per se will not be built. Arrangements would be worked out with the College of Agriculture or the University for the modest needs of the Centre. More quantitative information of office space is included in Chapter VII and in Annex 6.

Staff houses will need to be constructed in Gaborone as follows:

- 3 senior grade (for the Director, Manpower and Training Officer, Information and Publications Officer); and

- 1 medium grade (for Administrative/Accounts Officer).

Basic furnishings, equipment, and supplies, noted in detail in Chapter VII, would include:

- basic furniture, fittings (carpets, drapes, etc.) and appliances for staff houses;

- basic furniture (desks, chairs, table, files, shelves, etc.) and fittings for the office building;

- equipment to include electric typewriters, photocopy machine, small office computer with peripherals (this may be supplied by SADCC/CDA), projector and screen, 35 mm. reflex camera, and telephones and telex;

- vehicles (2 "combi" load/personnel carriers). It is assumed that most staff will have their own cars; and

- supplies (stationery, envelopes, photocopy paper, pens and pencils, etc.)

G. Administration

SACCAR would be established in Gaborone as a semi-autonomous, regional, non-profit, research support organization.

It would be administered by a Director who would be selected by the Government of Botswana (Ministry of Agriculture) in full consultation with the Member States, through the CTC for Agricultural Research. The Director would be responsible to the Ministry of Agriculture and to the CTC for Agricultural Research for the operation and management of the Centre. The Director would be an ex-officio member of the CTC for Agricultural Research.

The Ministry of Agriculture and the CTC for Agricultural Research would be responsible for the development and/or approval of the Centre's programs and for the policies under which the Institute operates, would be responsible for the employment of the Director, and would approve the appointment of the other senior staff members on recommendation of the Director. The Ministry of Agriculture and the CTC for Agricultural Research would review and approve the budget estimates for the Centre and arrange for the regular periodic review and audit of the Centre's accounts.

# VI. A five-year plan of work

## A. Status at the end of five years

First, a projection will be given of the status of SACCAR at the end of the initial five years of operation.

### 1. Staff

There will be three or four international (inter-regional) professional staff, consisting of the Director, the Manpower and Training Officer and the Information and Publications Officer. Pending results of the review to take place near the end of the second year, a fourth senior staff may be added. The assumption is that two senior scientist/advisors may be needed at that time. Initially, there probably will be only one, in the person of the Director. There is, of course, the likelihood that the Manpower and Training Officer would also be an agricultural scientist, but his primary responsibilities would be such that he could not be expected to devote any substantial amount of time to the role of senior science advisor.

It is anticipated that virtually all, if not all, of the international staff will be from the region by the end of the fifth year.

There will be an Administrative/Accounts Officer and other support staff. Support staff are not expected to increase beyond that planned for the first year, except for the addition of a driver/mechanic/general helper in the third year, when a second official vehicle will be acquired.

A printer may be added to the SACCAR staff, pending the outcome of the review at the end of the second year. If printing of the newsletter and workshop proceedings, special study reports, etc., proves unsatisfactory through commercial channels, it may be necessary to do the work in-house.

### 2. Physical facilities

The office building at Sebele, completed early in the second year, will be furnished and equipped as planned, including telex and desk computer services. The building, while being the official property of the Government of Botswana, should be under the administration of SACCAR while used by the Centre. The same would apply to staff houses built, or otherwise acquired, with SACCAR project funds.

### 3. Activities

The kinds and levels of activities expected to be carried out by SACCAR in its fifth year of operation are shown in Table VI-1.

SACCAR will have earned the right, through its activities, to be recognized by NARCs and other external research and donor institutions as the focal point for coordination of agricultural research in the region.

Table VI-1. SACCAR activities during its first five years

| Activity | Year 1[a/] | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Documentation (development plans, etc.)[b/] | → | → | → | → | → |
| 2. Research inventory[c/] | → | → | → | → | → |
| 3. Participation in research program reviews | → | → | → | → | → |
| 4. Special studies by SACCAR (number/year) | 2 | 2 | 3 | 4 | 4 |
| 5. Workshops/conferences by SACCAR (number/year) | 1 | 3 | 4 | 4 | 4 |
| 6. Small research grants (number/year) | | 18 | 27 | 27 | 27 |
| 7. Regional travel grants (number/year) | 9 | 18 | 27 | 36 | 36 |
| 8. CTC - Research meetings (number/year)[d/] | 1 | 2 | 2 | 2 | 2 |
| 9. Publications | | | | | |
| - SADCC Agr. Res. J. (issues/year) | | 2 | 3 | 3 | 3 |
| - Newsletter (number/year) | 2 | 4 | 4 | 4 | 4 |
| - Workshop reports, etc. (number/year)[e/] | 4 | 6 | 7 | 8 | 8 |

a/ It is assumed that all the professional and support staff will be on location by the second quarter of year 1.

b/ Documentation will be handled by the Information/Publications Officer. who will begin the first year to acquire, in consultation with SADIS, key national and SADCC documents.

c/ SACCAR will "take over" the inventory as developed by the SADCC/CDA teams. It should be operational by the end of year 1.

d/ It is assumed that two meetings per year will be held, one of which will include deans of faculties of agriculture and veterinary science.

e/ It is expected that SACCAR will print and distribute proceedings of the workshops of sponsors, as well as reports of special studies.

It will have close working relationships with all of those institutions, and play an important role in coordinating their inputs into research for strengthening individual national agricultural research systems, and cooperative regional research.

SACCAR will have a catalogued collection of key up-to-date documents on national and regional plans for agricultural research and development that will be used by Centre staff and visiting scientists and donor representatives. The computer-based research inventory will be current, being up-dated yearly, and will be a source of important information, available on a request basis, as printouts. Information needed urgently would be telexed.

The Centre personnel would be participating actively in many, if not most, of the general reviews of national agricultural research programs (e.g. annual reviews and planning exercises of the overall national program). They would be involved in reviews of all regional research projects.

By the fifth year, SACCAR is expected to be sponsoring annually in the order of: four special studies, four workshops, 27 small research grants (an average of three per country), and 36 regional travel grants (an average of four per country).

SACCAR will be arranging and supporting two CTC meetings per year for the Agricultural Research. One of these will include deans of faculties of agriculture/veterinary science, and representatives of privately-funded research.

Publications will be an important function of the Centre, with a quarterly newsletter as well as a SADCC Agricultural Research Journal being published with three issues per year. SACCAR will be printing annually in the order of eight reports of workshops and consultant studies.

SACCAR will have greatly improved contact with countries through: (a) increased flights into and out of the new international airport; (b) improved telephone service at Sebele; and c) telex facilities at the Centre and all headquarters of all national agricultural research systems.

## B. Phasing over the five-year period

### 1. Staff

The basic staff complement will be in place during the first year. It is assumed each person will, on the average, be in position for nine months of this first year.

On approval of the project to establish SACCAR, the Government of Botswana will need to move promptly in recruitment of staff. In fact, preliminary work should be well-advanced prior to actual approval (informal efforts to identify potential candidates, specification of detailed procedures for advertising, screening, interviewing and appointing staff). While appointments will be made by the Government of Botswana, care should be taken to involve all countries in the selection, e.g. commenting on

short-lists, or specific candidates. The CTC for Agricultural Research should figure prominently in the staffing process.

Staffing will be an important subject for consideration during the review of SACCAR, to be held near the end of the second year. As mentioned earlier, one consideration will be the possible need for a second experienced agricultural scientist/advisor; secondly, at that review, consideration will be given to the possible need for a printer. A second driver/mechanic/general helper will be added in the third year in connection with the purchase of a second SACCAR vehicle.

2. Physical facilities

Construction of the office building at Sebele and staff houses in Gaborone will be started around the middle of the first year. In order to meet this schedule, the Government of Botswana should move promptly, on approval of the SACCAR project, in arranging for construction plans, and solicitation and evaluation of tenders. The Team has proceeded on the assumption that because of the urgency of the SACCAR construction, coupled with the heavy load of work by the Government construction bodies, the Centre office building and staff housing will need to be handled by private construction firms.

Construction should be completed by the early to mid part of the second year. Prior to completion, it will be necessary for the Government to arrange temporary office space (presumably at Sebele) and assist in identifying temporary housing. Furnishings and appliances for the office building and houses will not be needed until the second year, except to the extent that they will be needed in temporary housing to be obtained during the first year. To the extent feasible, furnished temporary housing should be sought, until permanent housing is constructed.

The first vehicle, desk computer, typewriters, copier and telex will be purchased during the first year, and be placed temporarily in space made available at Sebele - prior to construction of the office building there. A second vehicle will be added in the third year.

Also, in the third year, it may be necessary to purchase a small offset press, pending results of the SACCAR review to be held at the end of the second year.

3. Activities

Although staff are expected to be in position for only about three-fourths of the first year, substantial program activities are expected to be carried out (see Table VI-1).

By the middle of the first year, work will be initiated on documentation[1/], research inventory, and staff will be expected to participate in some research program reviews.

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1/ In planning its documentation, SACCAR should determine its relationship to SADIS - the Southern African Documentation Service - a new activity approved by SADCC.

In the first year, a modest start will be made in special studies (2), workshops (1), and regional travel grants (also 1 per country). These activities, in general, are projected to increase in number from the first through the third or fourth year, leveling out thereafter.

SACCAR will be expected to arrange and fund one meeting of the CTC for Agricultural Research during the first year. Probably, this first one should include the deans. The meeting should have as a major item on the agenda a discussion of SACCAR - status, role, and plans.

During the first year, considerable attention will be given to publications. Beginning with perhaps two issues of the newsletter the first year, frequency would then move to a regular quarterly basis. There may also be reports of workshops and special studies. Further, plans should be made for publication of the Journal of Agricultural Research, starting the second year. The Journal should preferably be handled through an arrangement with Zimbabwe, involving the transformation of the Zimbabwe Journal of Agricultural Research to the Southern African Journal of Agricultural Research. Beginning the third year, the need is envisaged for three issues per year of the Journal.

Beginning with perhaps four workshops - special study reports in the first year, the number is expected to increase to a continuing level of about eight by the fourth year.

# VII. An Estimated Budget

## A. General

The overall estimated cost for SACCAR for the first five years is US$ 5,241,300, consisting of $597,600 for capital costs, $1,615,100 for general operating expenses, $3,028,600 for program expenses. A 10% inflation factor has been used for most of the budget items. The budget figures are summarized in the following three tables. Details are found in Annex 6.

## B. Capital costs

The largest component of the capital costs budget are buildings - an office block and staff houses. Estimates were obtained from the Architectural and Buildings Department, Ministry of Works and Communications, in Gaborone. The estimate given for the office block ($75,000) was increased by the Team to $125,000, taking into account the cost of the recently-completed Crops building at Sebele.

Since the staff houses are not likely to be completed before the end of the first quarter of the second year, provision has been made in the budget for rental of housing (or hotel accommodation) to cover the interim period. It is assumed temporary office space can be made available at Sebele until the office block is completed.

Furnishings, vehicles and equipment (except for the small computer) are available locally and were budgeted at local prices.

## C. General operating expenses

This part of the budget consists of salaries and benefits, operation and servicing of equipment and vehicles, and other (stationery, telephones, telex, postage, electricity and water). It is 30.8% of the overall budget, or 34.8% of the recurrent budget (general operating expenses plus program expenses). Salaries and benefits of senior and support staff, the largest item in this budget component ($951,700), constitute 20.5% of the recurrent budget.

If one or more of the senior staff members have to be recruited outside of the region, the corresponding estimate for salaries and benefits would have to be increased - perhaps by 35-70% (for one and two staff members, respectively).

The cost of operation of the telex (see Annex 6 for details) may be partially offset by making the services available to the Agricultural Research Station and College of Agriculture at Sebele.

D. Program Expenses

This component of the budget is made up of costs of specific projected activities or services of SACCAR: support for the CTC for Agricultural Research meetings, publications, workshops, special studies, research grants and travel grants. The estimated costs over the initial five-year period ($3,028,600) constitute 65.2% of the recurrent budget, reflecting the emphasis on the service role of the Centre.

E. Subscribing the Budget

The Team has taken the position that, in due course, the SADCC countries should assume full responsibility for financial support of SACCAR. Even from the outset, it is encouraged that member countries formally pledge some support. In this respect, consideration might be given to reassignment to SACCAR of some of the funds that earlier were used to support SARCCUS.

Outside support for SACCAR should be on a multi-donor basis to insure broadbased participation, facilitate an effective centre-donor interaction, and to provide a greater stability of support. CDA and other donor agencies are encouraged to support SACCAR, both financially and in terms of coordinating their research activities in the region.

F. Flexibility in use of funds

The Team considered it imperative for the Director of SACCAR to have ready access to funds provided for the Centre. Means must be found to avoid having three funds co-mingled with those of the Treasury of the Government of Botswana, thereby losing their identity and ready accessibility. A special account should be established for the Centre to which the Director had ready access.

Further, it is highly important that an appropriate part of Centre funds be in readily-convertible currency, for use in regional activities.

## SUMMARY OF THE BUDGET[1/]
(US $ '000)

Table 1. Capital Costs

| | Year | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| 1. Buildings | 306.3 | 106.7 | - | - | - | 413.0 |
| 2. Rental | 28.0 | 14.0 | - | - | - | 42.0 |
| 3. Furnishings - Staff Houses | - | 51.8 | - | - | - | 51.8 |
| 4. Furnishings - Office Block | - | 18.1 | - | - | - | 18.1 |
| 5. Equipment and Vehicles | 41.9 | - | 22.0 | - | - | 63.9 |
| 6. Contingency (5%, excluding buildings) | 3.5 | 4.2 | 1.1 | | | 8.8 |
| Total Capital Costs | 379.7 | 194.8 | 23.1 | - | - | 597.6 |

1/ For details see Annex 6

SUMMARY OF THE BUDGET
(US $ '000)

Table 2. General Operating Expenses

| | Year | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| 1. Salaries and Benefits | | | | | | |
| (a) Senior Staff | 89.0 | 113.7 | 116.9 | 137.5 | 159.0 | 616.1 |
| (b) Support Staff | 41.9 | 59.1 | 70.7 | 77.9 | 86.0 | 335.6 |
| Total Salaries and Benefits | 130.9 | 172.8 | 187.6 | 215.4 | 245.0 | 951.7 |
| 2. Centre Staff Travel and Subsistence | 27.2 | 58.0 | 63.7 | 70.1 | 77.1 | 296.1 |
| 3. Operation and Servicing of Equipment and Vehicles | 13.8 | 20.0 | 27.3 | 30.1 | 33.2 | 124.4 |
| 4. Other Costs | 20.0 | 32.0 | 37.0 | 37.0 | 40.0 | 166.0 |
| 5. Contingency (5%) | 9.6 | 14.1 | 15.8 | 17.6 | 19.8 | 76.9 |
| Total General Operating Expenses | 201.5 | 296.9 | 331.4 | 370.2 | 415.1 | 1,615.1 |

## SUMMARY OF THE BUDGET
(US $ '000)

Table 3. Program Expenses

| | Year | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| 1. CTC Meetings | 8.5 | 37.4 | 41.2 | 45.3 | 49.8 | 182.2 |
| 2. Publications | 8.9 | 37.4 | 55.6 | 66.8 | 75.3 | 244.0 |
| 3. Seminars/Conferences/ Workshops | 37.2 | 122.5 | 179.6 | 197.6 | 217.1 | 754.0 |
| 4. Special Studies | 24.0 | 26.4 | 43.6 | 63.9 | 70.2 | 228.1 |
| 5. Research Grants | - | 180.0 | 270.0 | 270.0 | 270.0 | 990.0 |
| 6. Travel Grants | 27.0 | 59.4 | 98.0 | 143.6 | 158.0 | 486.0 |
| 7. Contingency (5%) | 5.3 | 23.2 | 34.4 | 39.4 | 42.0 | 144.3 |
| Total Program Expenses | 110.9 | 486.3 | 722.4 | 826.6 | 882.4 | 3,028.6 |

GRAND TOTAL (Tables 1-3) 5,241.3

ACKNOWLEDGEMENTS

The Review Team found its assignment to be both challenging and stimulating, and trusts its report will be useful in the establishment of a vigorous Southern African Center for Cooperation in Agricultural Research. The Team is convinced of the need for such a center, as a critical element toward self determination in the fulfilment of national and regional agricultural development aspirations.

The support given by the Government of Botswana during both the preparatory phase and the actual review greatly helped the Team in the execution of its task. The Director of Agricultural Research, Dr. Kristian Oland, deserves special mention.

The Team expresses appreciation to the national directors of agricultural research and their staff, deans of faculties of agriculture and veterinary science, representatives of national scientific and agricultural research councils, and representatives of private sector research organizations for their unstinting cooperation.

The Team is grateful to the Executive Secretary of the SADCC Secretariat, The Administrative Secretary and Chairman of the Food Security Administrative Unit for the opportunities to obtain insights into the broader agricultural concerns of SADCC, in relation to the proposed coordination center for agricultural research.

Last, but not least, The Team expresses sincere appreciation to Mrs. M. Koosimile and Mrs. C. Mazhani of the Office of the Director of Agricultural Research at Sebele for their assistance in typing, and to Mr. Abiod Mosienyane in his help in transportation.

# TERMS OF REFERENCE

The terms of reference for this study are found in three key documents listed below, extracts of which are included in this Annex:

- The submission by the Government of Botswana of January 1983 entitled "SADCC Agricultural Research Initiative". Only the part "SADCC Agricultural Research Project No. 4" is included.

- The Record of the Second Meeting of SADCC Consultative Technical Committee (CTC) for Research, April 1983. Only parts of pages 5 and 6 are included which contain comments of the CTC for Agricultural Research on the terms of the reference.

- The telex from USAID/Zimbabwe to IADS of April 27, 1983.

## A. "SADCC Agricultural Research Initiative"

### SADCC AGRICULTURAL RESEARCH PROJECT NO. 4

PROJECT FOR A CONSULTANCY ON THE ESTABLISHMENT AND OPERATION OF A CENTER FOR THE CO-ORDINATION OF AGRICULTURAL RESEARCH IN THE SADCC COUNTRIES

1. Background

Heads of State, at the Lusaka Summit in April 1980, directed that Agricultural Research is to be an area of cooperation between the SADCC countries. The Resolution gives priority to research related to the agricultural problems of the semi-arid (drier) areas. The Botswana Government was assigned to take the leadership of agricultural research cooperation, with ICRISAT specifically mentioned as an institution to cooperate with.

In response to the Summit Resolution Botswana and ICRISAT have submitted proposals for regional research projects to be located in the SADCC countries. Projects for the immediate future will be (a) Improved water management systems for agriculture in Southern Africa, to be based in Botswana (b) Sorghum and Millet Improvement, to be based in Zimbabwe, and (c) Groundnut Improvement, based in Malawi.

However, a full response to the Summit Resolution also requires an institutional component to coordinate research. ICRISAT has recommended that the International Agricultural Development Service (IADS) or a similar agency, with ICRISAT's participation, conduct studies leading to the establishment of an Agricultural Research Coordinating Center.

Annex 1

2. Terms of reference for the consultancy

2.1. Composition of the consultancy team

The team should consist of not more than 5 distinguished agricultural scientists with administrative, institutional building and international cooperation experience. The team should include at least two citizens of SADCC countries.

2.2 Time of the consultancy and submission of report

The consultancy should be carried out in 1983 and the final reports submitted to Botswana by June 1983.

2.3 Visits to SADCC Countries

Botswana will arrange for the team to visit all the nine countries of the SADCC where discussions will be held with representative groups of scientists and administrators in the national agricultural research service and other bodies concerned with agricultural research.

2.4 The team will determine the need and interest among national research organizations, institutions and scientists for the establishment of a Center for Agricultural Research Coordination in the SADCC countries and its relationship with the

(a) national agricultural research systems,

(b) international agricultural research centers of the OGIAR,

(c) Scientific Technical Research Commission of the Organization of African Unity (OAU/STRC),

(d) Cooperation for Development in African Agricultural Research Group,

(e) agricultural associations in the region, and

(f) other external agricultural research organizations, "aid" agencies, and foundations.

2.5 Functions of the Coordinating Center

The team will examine and make recommendations on the relevance, broad acceptability and practical and efficient application of the following suggested functions of the coordinating center.

Annex 1

(a) To keep up-to-date records of agricultural development policies and production targets for each of the SADCC countries and for the region; analyze these with respect to availability of technology and actual research support; and, if justifiable, to outline additional research requirements and from which source they may best be met (through scheduling of national research, through regional cooperative programs or through establishment of regional research programs of the international agricultural research centers).

(b) To review, at regular intervals, national and international programs in the region, propose changes which could lead to increased efficiency and benefits from the programs; and to submit the reviews and proposed changes to appropriately constituted national and regional meetings for scrutiny, revision if necessary, and for authorization of recommendations (directed to individual researchers, research institutions, or to bodies superior to the meeting which makes the recommendations).

(c) To maintain an inventory of agricultural research workers and research projects in the region; and advise and assist groups or individual researchers in the planning of a detailed program of work.

(d) To encourage the rapid reporting and publication of local research results by publishing a scientific agricultural journal for the region.

(e) To publish a quarterly information bulletin of news, views, reviews, and notes on current research activities including such items as highlights of research programs, new crop variety releases and reports of meetings, workshops, etc.

(f) To promote and facilitate between the SADCC countries:

(i) A continuous interchange of technical and scientific information, expertise and know-how.

(ii) Regional meetings/conferences/workshops/seminars of a specialist or general nature.

(iii) Exchange of visits by specialists, scientists and technicians.

(iv) Concerted studies of problems common to several of all countries, and the initiation of a coordinated cooperative resolution of such problems.

(v) Regional cooperation in the training of scientific and technical personnel.

Annex 1

(vi) Establishment and operation of a cooperative network of regional crop variety evaluation trails.

(g) To promote greater interaction with International Agricultural Research Centers and coordinate the activities of their research programs in the region.[1]

2.6 Coordinating Center Budget

The team will describe the resources (manpower, finance and physical facilities) required for the establishment and activities of the Coordinating Center with attention to economy in the use of resources.

2.7 The team will also advise on other matters concerning the relationship between agricultural research and food production.

2.8 Consultancy Report

The outcome of the consultancy will be (a) a detailed report on the findings and recommendations and (b) a project paper on the establishment and operation of the Coordinating Center.

B. "Record of the Second Meeting of SADCC Counsultative Technical Committee (CTC) for Research" held in Harare from 19th to 21st of April 1983. (Extract)

6. Consultancy for the Establishment and Operation of a Center for the Coordination of Agricultural Research in the SADCC Countries.

Considered: Terms of reference for the consultancy, pages 20 to 23 of "SADCC Agricultural Research Initiative" (ICRISAT Report).

Noted: That Botswana has requested a Project Preparation Team. It is anticipated that the Team will be in the SADCC countries from around Mid-May. The team will be composed of internationally recognized experts with experience in the areas of (a) institution building, and (b) international co-operation in agricultural research. Members of the team may come from:

2 from SADCC countries

1 from U.K. of other European Country

1 from Brazil (eminent Portuguese speaking research administrator), and

1 from Agency which assembles the Team.

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[1] Items "h" and "i", dealing with regional crop germplasm bank, and central data processing and agroclimatological services, originally included, were later deleted by CTC for Research.

i. CTC for Research recommends implementation of this Project, as urgent, and agrees to the Terms of Reference in the ICRISAT Report with the following amendments:

(a) Establishment of crop germplasm banks should not be part of the activities of the Coordination Center, and reference to this to be omitted.

(b) To provide central data processing and agroclimatological services to the SADCC countries should be omitted from the Terms of Reference.

(c) Added to the Terms of Reference should be: To study the potential usefulness of the establishment of A Professional Society of Agricultural and Livestock Scientists of SADCC countries as proposed by the CDA Draft Report (April 1983), (though it was pointed out that AAASA already exists).

ii. From the discussion of this Project should further be noted:

(a) The Project Preparation Team should visit the Editorial Office of the Zimbabwe Journal of Agricultural Research and consult the appropriate national authorities in order to explore the possibility of that journal becoming the SADCC Journal for Agricultural Research.

(b) The keeping of up-to-date inventories of agricultural research activities and allocation of resources to agricultural research, and the preparation of country research review, were considered essential activities of the center, both as services to national agricultural research policy formulation and planning in the individual SADCC country, and for planning of joint SADCC research programmes.

(c) The role of the Research Advisors was found not to be easy to visualize at present, but the idea should be explored by the Project preparation Team.

C. Telex from USAID/ZIMBABWE of April 27, 1983 to IADS

The scope of work is as follows:

1. Background

Heads of State, at the Lusaka Summit in April 1980 directed that agricultural research should be an area of cooperation between the SADCC countries. Presently there is little systematic planning and coordination of Agricultural Research Projects in the region. In addition there is little exchange of research

findings among scientists in National Research Services. The combination of language problems, foreign exchange constraints and a lack of a common scientific journal in the region result in fragmented communication and a failure to achieve the full potential of regional cooperation in agricultural research. At a recent SADCC/Donors meeting in Maseru, Lesotho, the Republic of Botswana submitted proposal for several regional research projects and a proposal to establish an Agricultural Research Coordination Center.

2. Some members of the team will visit each of the nine SADCC countries, if possible, in order to ascertain the present status of research cooperation, coordination and communication among individual agricultural researchers, research teams, national agricultural research services and university researchers. The team should identify gaps in communications, and cooperation and synthesize this information on a country-by-country and regional basis.

The team should solicit ideas from researchers and members governments on how regional cooperation, coordination and communications could be enhanced through the establishment of a small agricultural research coordination center.

The Team will prepare a detailed plan of work, staffing plan, budget and phasing of activities for an initial five-year period. The team will carefully lay out a set of activities which is manageable with a small repeat small professional core staff. The activities of the Center could include some of the following:

- Maintenance of a computerized inventory of regional agricultural research projects, names of researchers by country and discipline, and a list of key national research projects (if funding permitted).

- Publication of a SADCC Agricultural Research Journal.

- Exchange of visits by specialists, scientists and technicians.

- Regional meetings/conferences/workshops/seminars on special or general problems.

- Studies of agricultural research policy, research priorities, resource allocation to agricultural research and research/extension linkages.

The team will also assess the feasibility and likely benefits from the formation of a regional professional organization of agricultural researchers and what, if any, association such an entity should have with the Regional Coordination Center.

Annex 1

3. Staffing and budget

The team will prepare a staffing plan for the center in order to carry out the activities agreed upon. The team will also prepare an annual budget for a five-year period, including manpower, finance and physical facilities for the center.

4. Composition of the team

The four to five-member team should consist of a least two members (Team Leader and one other member) who will work continuously for a period of six weeks. The other two to three members can be hired for three to four week periods. At least two of the team members should be from the SADCC region. There should be a Portuguese speaker on the team for Mozambique and Angola. Access by team member for latter would be better assured if Portuguese speaker were European member or Southern African. The team should assemble in Gaborone for three days of orientation before departing in sub teams of one to two individuals for the country visits.

The team should also assess the feasibility and likely benefits from the formation of a regional professional organization of agricultural researchers and what, if any, association such an entity should have with a regional coordination center.

# RESUME OF TEAM MEMBERS

## GUY B. BAIRD

**Present Position:** Program Officer, Africa and the Middle East, International Agricultural Development Service (IADS), Rosslyn Plaza, 1611 N. Kent Street, Arlington, Va. 22209, U.S.A.

**Experience:**

1952 - 1959
Soil Scientist, Colombian Agricultural Program, The Rockefeller Foundation

1959 - 1971
Assistant Field Director, and later Director, Indian Agricultural Program, The Rockefeller Foundation

1972 - 1977
International Agricultural Research Specialist, and Associate Director (Research), Office of Agriculture, U.S.A.I.D., Washington, D.C.

1977 - present
Program Officer, IADS

**Education:**

B.S. Agronomy, N.C. State College

M.S. Agronomy (Soils), N.C. State College

Ph. D. Agronomy (Soils), Cornell University

Annex 2

MARTIN L. KYOMO

Present Position: Professor of Animal Production and Dean of the Faculty of Agriculture, Forestry and Veterinary Science, University of Dar-es-Salaam, Morogoro, Tanzania.

Experience:

1962 - 1969
Research Office (Livestock)
Ministry of Agriculture, Tanzania

1967 - 1968
Director, Mpwapwa Livestock Research Station
Tanzania

Jan. - Nov. 1969
Chief Research Officer (Livestock)
Ministry of Agriculture, Tanzania

Dec. 1969 to date
University teaching

1973 - 1979 and 1982 to date
Dean, Faculty of Agriculture,
Forestry and Veterinary Science,
University of Dar-es-Salaam, Morogoro,
Tanzania

1977 - 1978
Member of eleven-man team appointed by the Secretary General of the Commonwealth Secretariat to advise him on Food Production and Rural Development.

Education:

B. Sc. (Agric.) (Makerere/London)

M. Sc. (Colo. Sta. Univ.)

Ph. D. (Dar)

Annex 2

# EUGENIO MARTINEZ

**Present Position:** Consultant to School of Agriculture,
Federal University of Bahia, Brazil

**Experience:**

1955 - 1960
Researcher at the Office of Special Studies,
Mexico

1963 - 1973
Director of CIANO Experiment Station, Sonora,
Mexico

1973 - 1976
Director of ICTA, Guatemala

1977 - 1979
Agricultural Research Specialist
The Rockefeller Foundation
The State of Bahia, Brazil

1980 - 1981
Consultant to EMBRAPA Brasilia, Brazil

**Education:**

B.S. Inst. Technologico Monterrey

M.S. Michigan State University

Ph. D. University of Wisconsin -
Plant Pathology

Annex 2

LEWIS K. MUGHOGHO

Present Position: Principal Plant Pathologist, Scrghum Improvement Program, International Crops Research Institute for the Semi-Arid Tropics, (ICRISAT), Hyderabad, India.

Experience:

1962 - 1963
Research Fellow, University College of Rhodesia & Nyasaland.

1967 - 1969
Plant Pathologist, Grain Legume Productivity Unit, Agricultural Research Council (ARC) of Central Africa (Malawi, Rhodesia and Zambia; later ARC of Malawi).

1969 - 1979
University of Malawi:
1. Head of Crop Production Department first as Senior Lecturer, later as Professor from 1975
2. Principal and Dean, Bunda College of Agriculture, 1973 - 1977

Nov. - Dec. 1980
Leader of the ICRISAT Mission to SADCC countries that recommended the establishment of regional research porjects and a research coordinating unit.

1981 - 1983
Member of the interview panel of the University of Cambridge Livingstone Trust Scholarships for Southern Africa.

Jan. 1983
As a representative of ICRISAT, worked with Botswana in the preparation of the "SADCC Agricultural Research Initiative" (containing four projects including the SACCAR consultancy) which was submitted to the January 1983 SADCC Meeting in Maseru.

Education:

B.Sc. Botany & Zoology, University of London

D.I.C. Post Graduate Diploma, Mycology and Plant Pathology, Imperial College of Science & Technology, University of London

Ph.D. Plant Pathology, University of Cambridge

Annex 2

## J.B.D. ROBINSON

**Present Position:** Advisor/Consultant for Overseas Development Administration, U.K. on specific tropical crops, research organization, management, programmes and development.

**Experience:**

1948 - 1960
Research Officer, soil fertility, crop nutrition fertilizers and agronomy, Barbados and Kenya.

1960 - 1963
Director of Coffee Research and Coffee Research Services, Tanzania

1960 - 1969
Deputy Director and Senior Soil Chemist, East African Agriculture and Forestry Research Organization, East African Common Services Organization, Muguga, Kenya

1970 - 1973
Assistant Director of Agriculture (Research) Fiji, S. Pacific.

1974
Short term overseas mission for ODA, U.K. e.g. CENTO Organization.

1975 - 1976
Research Director, Tonga, S. Pacific

1976 - present
ODA and International Organization Consultant/ Advisor in tropical agriculture, principally problem solving, research organization, programmes , management and development (28 missions to date)

**Education:** B.Sc. Hons. Agric. Chem. (1st Class), M. Phil. Reading University

Ph.D. Makerere/London (Univ. of East Africa)

F.R.S.C., C. Chem, F.I. Biol. F.R.S.H.

# AGRICULTURAL RESEARCH IN ANGOLA

## A. Brief description of the national agricultural research system

Crops research is handled by I.I.A. (The Instituto de Investigacoes Agronomicas) which is located at Huambo, in the interior of the country. It is one of the several dependencies under the Vice Minister of Agriculture (see organigram). IIA consists of the Departments of Soils, Phytopathology and Plant Breeding. It has 20 researchers, all at the B.Sc. level.

Animal research is within the I.I.V. (Intituto de Investigacoes Veterinarias) and deals mainly with diagnosis and treatment of diseases, and preparation of vaccines.

There is one College of Agriculture (Facultade de Ciencias Agrarias), also located at Huambo, which grants the equivalent of B.Sc. degrees. Also, there are three technical schools of agriculture (Institutos Medios Agrarios).

## B. Research priorities

The priorities in crop research are maize, rice, cassava, potatoes, cotton and coffee. Within the animal sciences, poultry receives primary attention.

## C. Publications

There is no regular research publication at present. There are farmers publications.

## D. Interaction of the national research system with other national systems in the SADCC region

There is some interchange, mainly with Zimbabwe, but it is considered weak. Scientists try to attend regional meetings.

## E. Cooperation with international research organizations

IIA has some relationships with IITA (Two IIA scientists have been train at IITA) and with CIMMYT.

## F. Views on possible functions of a coordinating center

1. Maintenance of up-to-date records of agricultural development policies, production targets and reviews.

Some data can be provided but perhaps some cannot. The persons interviewed consider that in this regard only the Minister can give an opinion.

2. Assist with the reviews, at regular intervals, of national and international research programs in the region.

The view was expressed that the reviews can be done at the request of the country and wherever there is a need for such.

3. Maintenance of an inventory of agricultural research workers, research projects and resources for research.

The national research system can provide information about the research workers and research projects, but cannot give information about resources for research.

4. Promote continuous and rapid interchange and utilization of technical and scientific information by:

(a) technical journal and newsletter

(b) regional meetings, conferences, seminars etc.

(c) exchange of visits by specialists, scientists and technicians.

This function is considered to by very important, and they emphasized that in the case of the journal and newsletter, the use of Portugese is very important. This is perhaps even more important in the case of conferences and seminars, because while they can read English with some difficulty, they find it difficult to fully participate in seminars given in English.

5. Promote and facilitate concerted studies of problems common to several or all countries.

This was considered to be an important function.

6. Promote cooperation in training and career development of scientific and technical personnel.

This was considered to be the first priority and the greatest need, and they pointed out that the training has to be in Portuguese. Their opinion is that the trainers can be from Portugal, Brazil or from a Latin American country, considering that it will be easy for them to understand Spanish.

7. Encourage free exchange and cooperative evaluation of plant and animal germplasm and improved material.

They are in agreement.

8. Promote effective interaction with the international agricultural research centres.

They agree completely.

G. Persons interviewed

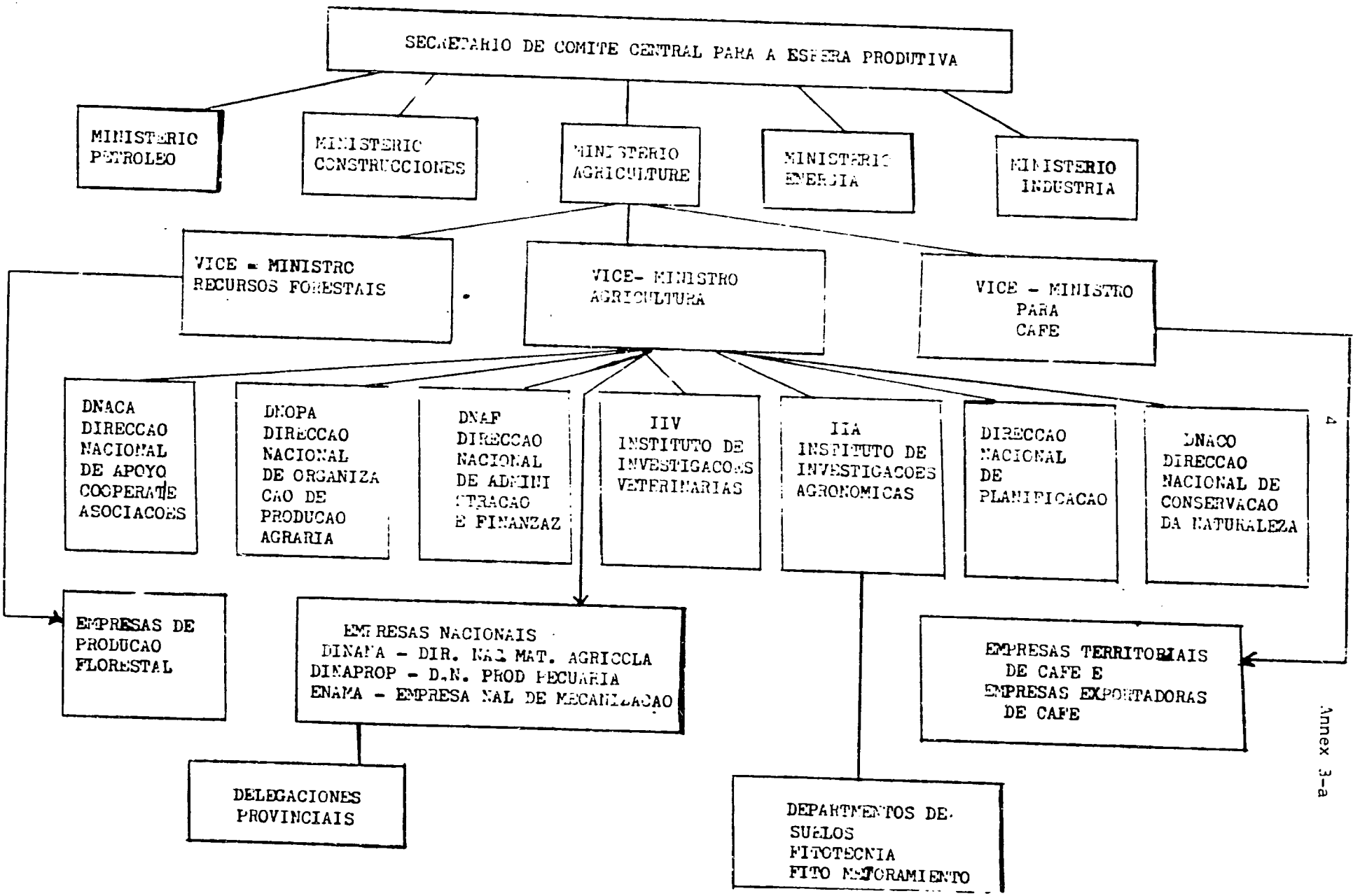
Oscar Asencot de Menezes - Director of Nacional de Organizacao da Producao Agraria.

Jose Reis - Chefe de Sector de Fitosanidade

Carlos Rosario - Chefe de Departamento de Agricultura

Joana Coelho da Cruz (SRA) - Chefe do Cabinete do Ministro do Agricultura.

# A N G O L A

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Annex 3-a

6D

Annex 3-b

# AGRICULTURAL RESEARCH IN BOTSWANA

## I. The Components

The Department of Agricultural Research in the Ministry of Agriculture is responsible for all national agricultural research. The Department is headed by a Director of Agricultural Research who is assisted by a Chief Arable Research Officer, as Head of the Arable Crops Division, and a Coordinator for the Animal Production Research Unit.

The current program of research in the Arable Crops Division consists of the following projects and experiments:

1. The Dryland Farming Scheme which conducts studies on the problems of soils and climate as they affect arable cropping in the semi-arid areas.

2. Evaluation of Farming Systems and Agricultural Implements Project. The objective of this project is to develop a range of animal powered machinery for cultivating, planting, weeding and fertilizing the main arable crops of Botswana.

3. The Agricultural Technology Improvement Project conducts farming systems research in Eastern Botswana.

4. Agricultural Development Ngamiland is also a farming systems project in Western Ngamiland.

5. Melapo Development is a water management project at the Mazanga molapo in Eastern Ngamiland.

6. Plant pathology: studies on sorghum downy mildew and cowpea aphid-borne viruses.

7. Entomology: biology and ecology of stalkborers, insecticide evaluation, pest surveys.

8. Crop Screening: sorghum, maize, cowpea, mungbean, sunflower and groundnut.

9. Fertilizer research.

10. Nitrogen studies in cereal/legume crop mixtures and sorghum/cowpea rotation.

11. Crop Improvement (pulses and oilseeds).

12. Wheat investigations (yield evaluation of introduced material under dryland and irrigated conditions.

13. Horticulture, mainly agronomic trials of cabbage, carrot, onions and potatoes, and studies on the economics of production.

The Animal Production Research Unit conducts research in beef production and range management. It has experiments in animal breeding, nutrition, health and husbandry. It also conducts research in production economics and diarying. Range management experiments include bush control, grazing systems, stocking rate, communal grazing and fodder introduction.

II. Priorities and Strengths

Priority areas of research are sorghum and cowpea production, and beef and range management.

Areas of strength are in:

(a) development and testing of ox-drawn equipment or machinery for small-farm use in semi-arid areas.

(b) crop water use efficiency studies under semi-arid conditions.

(c) cattle breeding and range management studies.

III. Publications

The Department of Agricultural Research publishes two division reports in arable crops and livestock, respectively, and separate projects reports on an annual basis.

IV. Interaction with national agricultural research systems in the SADCC region

Since the demise of SARCCUS, to which most of the SADCC countries belonged, interaction with other national agricultural research systems has been poor. The only noteworthy activities are the receipt of groundnut an maize germplasm from Zimbabwe, and the transmission of soya-bean germplasm from Zimbabwe through Botswana to Zambia. Recently Ms. L.L. Lethola, animal breeder at Sebele Research Station, visited Zanzibar at the request of the authorities there as a consultant in beef cattle breeding.

V. Cooperation with research and research support organizations outside SADCC.

Many donor countries and international donor organizations support agricultural research in Botswana. There also exists effective interaction with the IARCs. ILCA, for example, has a representative located at Sebele Research Station.

10

Annex 3-b

VI. Views on regional cooperation

A. Need for a regional centre

There was unanimous agreement on the need for a centre to promote cooperation in agricultural research between SADCC member countries.

B. Views on suggested functions of the Center

There was general support for the suggested functions of the Centre as contained in the terms of reference. However, on the function of "assist with reviews of national programs", the view was expressed that the Centre should make the service available and use it only at specific request of national programs.

The urgent need for regional germplasms as working collections was emphasized, as well as the training of technical farm research personnel, and assistance to national programs in experiment station development and operation.

Another area in which it was felt the Center could play an important role, is to advise government of important areas requiring research and the application of research results to farm production.

C. Possible contribution to regional activities

Botswana has strengths to share with other SADCC countries in cattle breeding, range management, sorghum breeding, soil physics and testing of ox-drawn equipment.

VII. Organizations and persons contacted

Office of the President

| | |
|---|---|
| L.M. Mpotokwane | Administrative Secretary, and Chairman of SADCC Committee of Officials. |

Ministry of Finance

| | |
|---|---|
| E.M. Maphanyane | Planning Officer (SADCC) |
| M. Afeta | Principal Planning Officer |
| Carol Heald (Ms) | Secretary, Inter-Ministerial Drought Committee |

Annex 3-b

| | |
|---|---|
| **Ministry of Agriculture** | |
| D. W. Finlay | Permanent Secretary |
| M. Mokone | Chief Agricultural Economist |
| **Ministry of Works and Communications, Department of Architecture and Buildings** | |
| K. Kove | Architect |
| **Central Agricultural Research Station, Sebele** | |
| K. Oland | Director of Research |
| D.E. Gollifer | Chief Arable Research Officer |
| L.M. Mazhani | Sorghum Breeder |
| M.M.J. Mlambo | Chief Technical Officer, Animal Production Research Unit |
| C.S. Manthe | Entomologist |
| M. Jones | Leader, Dryland Farming Research Project |
| P. Brown | Team Leader and Agronomist, Evaluation of Farming Systems and Agricultural Implements Project |
| J. Hennessey | Range Research Officer and Data Processing |
| **University of Botswana** | |
| H.K. Raseroka (Mrs.) | University Librarian |
| **Printing and Publishing Co. Botswana (Pty) Ltd.** | |
| M. Thompson | Commercial Manager |
| **UNDP** | |
| A.D. Mulenga | Program Officer |

Annex 3-b

USAID

| | |
|---|---|
| Paul Guedet | Director |
| Anita Mackie | Rural Development Officer |

British High Commission

| | |
|---|---|
| A. Davies | Acting High Commissioner |
| S.W. Gregson | Aid Secretary |

VIII. Documents Consulted

1. Anon. Draft research work programme, Agricultural Research - Arable Crops Division, List of ongoing projects and experiments 1982/83. Mimeo 19 pp.

2. Anon. 1980. Ten years of animal production and range research in Botswana. Animal Production Research Unit, Ministry of Agriculture, Gaborone. 199 pp.

3. Anon. Evaluation of farming systems and agricultural implements project (EFSAIP) Botswana Report No. 5 1980-81, and Report No. 6 1981-82.

4. Anon. Dryland Farming Research Scheme, Phase III
Third Annual Report 1981/82.
Summary 21 pp.

# AGRICULTURAL RESEARCH IN LESOTHO

## I. The Components

### A. Department of Agricultural Research Services

The Agricultural Research Division is in the Ministry of Agriculture, Cooperatives and Marketing. At present, the main emphasis is on crop research, and this is being undertaken at the Maseru Central Experiment Station. There are sub-stations at which field trials are undertaken and these comprise: Leribe, Teya-teyaneng, Matsieng and Mafeteng in the lowlands; Machache in the foot hills; and Mokhotlong in the eastern part of the mountains. The main fields of operation are:

(i) Agronomy

(ii) Horticulture

(iii) Pasture and Range

(iv) Plant Protection

(v) Seed Testing, and

(vi) Engineering

An integrated approach to farming system research is being undertaken with assistance from USAID. Animal production research has not been launched yet, but it is anticipated that in future great emphasis will be paid to improving the quality of livestock.

The Government of the Kingdom of Lesotho has been keen to see that agricultural research was directed at looking for ways and means of halting soil erosion, improving soil fertility and improving the productivity of livestock.

Lesotho has been investing in crop research since the 1930s. The crops which have been receiving major attention are: maize, wheat, sorghum, malting barley, soya beans, groundnuts, fruits, while haricot beans, peas, sunflower, potatoes an lentils.

The main programs of work include:

(i) Irrigation research under the Irrigation Research Project,

(ii) Dryland crop research which is undertaken at the Maseru Research Station and includes:

(a) Soil fertility and fertilizer studies,

(b) Varietal testing for different agro-ecological zones for major cash crops such as maize, sorghum, wheat and beans,

(c) Cultivation trials,

(d) Herbicides trials,

(e) Insecticides trials,

(f) Experiments with potential cash crops such as malting barley, soya beans, groundnuts, fruits and vegetables.

A USAID-supported Research Report on Lesotho's Agricultural Sector Analysis of 1978 emphasized the need for more information on climate and soil capability so as to be able to predict and counter environmental hazards which include, or lead to, recurrent droughts, frequent hail, crop killing frosts, field flooding and infestation of crops by insects and blight. In the Farming Systems Research Project, expatriate specialists in agronomy, extension and marketing work hand in hand with Lesotho nationals in trying to see that research findings get applied and benefit the farmers. The USAID has also funded Field Research Centers in which demonstrations to farmers on improved farming techniques are undertaken.

B. The National Research Council

The National Science Research Council established several years ago, has not been active in recent time. The Unit in the National University of Lesotho at Roma, known as the Institute of Southern African Studies (ISAS), is playing the role of the National Research Council. The Board of Directors of the Institute includes senior officials in most of the Government Ministries. The Director of Agricultural Research is a member of the Board, and the Vice-Chancellor of the National University of Lesotho is the Chairman. The Board receives, considers and approves or rejects the applications to undertake research by various scientists in the country. The ISAS disburses funds for research once the project has been approved. The Rockefeller Foundation has supported the establishment of the Institute (ISAS) in the national University. The Free University of Amsterdam, Holland and other agencies have also provided funds for research to the ISAS.

Annex 3-c

C. Research by the University

Although Lesotho has no faculty of agriculture (one is planned to start at the College of Agriculture in Maseru in 1984), some agriculturally-related research is undertaken by the ISAS in the National University of Lesotho. It is hoped that when the Faculty of Agriculture is established, it will assist in training local agricultural scientists who would undertake research. These would work together with the Lesotho nationals who are currently undertaking research and who are too few to be very effective.

D. Other Organizations which undertake agricultural research

At the time of the visit, there were no other institutions other than the Ministry of Agriculture and the University which were undertaking agricultural research. However, the Fertilizer Board, the herbicides companies, the Agricultural Associates Company, and the seed companies have supported research by providing funds, chemicals or seeds.

II. Priorities and strengths

The findings from the ISAS Unit and the Farming Systems Research Project will be of value to all SADCC countries. Lesotho can also contribute to the knowledge on crops, fruits and vegetables which are adapted to areas with a temperate climate.

III. Publications

Agricultural scientists in Lesotho do not have a scientific journal in which to publish their results. Only occasional research papers are published. The research workers in the Ministry of Agriculture, therefore, welcomed the idea of having an agricultural science journal for the SADCC countries.

IV. Interaction of the national agricultural research system with other national systems in the SADCC region

The interaction of staff in the Research Division with counterparts in other SADCC countries is mostly on an informal, personal contact basis. There has been an exchange of maize and wheat seeds with Zimbabwe and beans with Malawi. Agricultural scientists in Lesotho have visited research centers in Botswana, Mozambique, Angola, Zimbabwe and Zambia, but these visits have been arranged on an informal basis. Lesotho was very keen to see that there was more cooperation between agricultural research scientists in the SADCC countries.

Lesotho has well established wool and mohair industries, and is the world's fourth largest producer of mohair, after the Republic of South Africa, USA and Turkey. If research were developed to improve the productivity of these industries, SADCC countries with potential for wool and mohair production could learn from Lesotho. The country has in addition several crossbred cattle. Screening them for either dairy or beef production, using the experiences from Botswana and Zimbabwe, would be very worthwhile. Lesotho could also benefit from other SADCC countries in the fields of livestock nutrition, pasture and range management, afforestation and water harvesting techniques.

V. Cooperation with and research support by organizations outside of the SADCC region

The Department of Agricultural Research cooperates with CIMMYT, ICRISAT, IITA an CIAT.

The organizations which provide financial support for agricultural research include, USAID, IDRC, FAO, ISNAR, the Rockefeller Foundation, the Netherlands Government and ODA.

VI. Views of the national agricultural system on regional cooperation

As pointed out earlier, the agricultural research staff in the Ministry of Agriculture in Lesotho are very keen to see that there is cooperation in agricultural research among the SADCC countries. Lesotho would gain in the fields of exchange of information, training, and exchange of improved varieties of crops. They would in turn offer some experience in farming systems and in horticulture.

VII. Organizations and persons contacted

A. Ministry of Agriculture

1. W.P. Nts'ekhe, Chief Research Officer
2. M.T. Matli, Deputy Chief Research Officer
3. P. Kolobe, Accountant
4. M.M. Kotsokoane, Sen. Research Officer, Horticulture
5. H.M. Makhatha, Fodder Tech. Officer

USAID Farming Systems Research

6. J. CLark Ballard - Chief of Party
7. D.V. Youmans - Extension Specialist

Annex 3-c

B. The National University of Lesotho

1. A.H. Rweyemamu, Insistute of South African Studies

VIII. Documents Collected

1. Staff List Division of Agricultural Research. (Mimeo).

2. Agricultural Research Technical Information Bulletin. A new Model for the Education of Village Agricultural Committee Members at Nyakosba and Siloe, Lesotho. April 12-21, 1983. By D. Youmans. Extens. Specialist. Wash. St. Univ. and Min. of Agriculture. Maseru.

Annex 3-d

# AGRICULTURAL RESEARCH IN MALAWI

## I. Organization of research

Attached to this country report are three organigrams the first of which (1a) shows the recently adopted organization of the Ministry of Agriculture and the place of the department of agricultural research within this organization. The second of these organigrams shows the current organization of the department of agricultural research, bearing in mind that research subjects and crops are projectised and that each research project (program) has a national program coordinator. The third of these organigrams (1c) shows the proposed organization of the department of agricultural research in which the current research projects (programs) are grouped into commodities. Note the part of this proposal under ADD (Agricultural Development Division) Adaptive programs; there will be eight of these carrying out on-farm-trials testing the recommendations put out by research teams. ADDs will also assist extension staff with farmer demonstration plot work.

This description of research organization in Malawi does not include commodity funded research on tea and tobacco nor university research. The link is through the Chief Agricultural Research Officer who is a member of research boards, etc.

## II. Research staff establishment

The total establishment of research staff from Chief Agricultural Research Officer to Technical Assistant levels, and including Senior Administration staff, is 436 for Malawi with its 6.3 million population. Total vacancies amount eight only. In slightly more detail there are 75 Principal Officer (Graduate Research Officer) posts of which two are vacant; 89 Technical Officer (3-year Diploma) posts of which one is vacant; 272 Technical Assistants (2-year Certificate) posts of which four are vacant and eight Senior Administrative Officer posts of which one is vacant.

## III. Research training programmes - research officers

There are 12 staff in the USA in Ph.D. programs, and 14 staff in M.Sc. programs (12 in the USA and 2 in the U.K.). Three-year Diplomate and Two-year Certificate training is carried out in Malawi.

## IV. Major research programs

Major research programs are present in the commodity-funded crops, tea and tobacco. The emphasis in the Department of Agricultural Research is in maize, cotton, groundnuts, rice and horticultural crops (fruit, tree nuts and vegetables ).

There is to be a greater thrust in livestock research which will be expanded and intensified. Very little research has been done on goats (the most numerous livestock) or sheep though a little has been done with introduced breeds by the university. There has been some work on rabbits for meat production but very little farmer production is going on.

Significant but of lower priority is research in sorghum and pearl millet, phaseolus beans, wheat and triticale (to attain self sufficiency), root crops (sweet potato, cassava, European potato) pastures, and legume microbiology.

There is a major thrust in back-up to research and extension in the National Rural Development Programme (NRDP) within the Ministry of Agriculture, which has some research input. Areas of development identified as critical are markets for produce, roads, schools, health services, credit, availability of agricultural inputs and water supplies. The whole country is to be covered for these developments in 17-20 years (from 1979).

V. Commodity research

As previously mentioned, tea and tobacco research are both commodity-financed. The Tea Research Foundation of Central Africa employs 11 graduate research officers, 4 diplomate technical staff and 10 certif icate technical assistant staff; its annual budget is about K 0.5 million. The Tobacco Research authority employs nine graduate research officers, five technical officers and 12 technical assistant staff; its annual budget is about K 610,000. Furthermore, the Tea Research Foundation in Malawi is a regional one covering Zimbabwe (which contributes funds to the research budget) and Mozambique which is currently negotiating a relationship. There is financial support to government research in macadamia and tung oil nut, from the respective industries. The sugar industry produces an important export commodity, but there is currently no research beyond the importation and testing of varieties by the industry itself. There is a close link for this purpose with the Mt. Edgecombe Sugar Cane Research Station in Natal. Currently arrangements are being made for the sugar industry to fund its own research on local problems.

IV. Research funding

Including commodity research funds, agricultural research in the Ministry of Agriculture, Malawi, is funded 80% nationally and 20% externally. External funding is in these main areas: agricultural economics, farming systems, horticulture, maize, groundnut, wheat pasture, livestock, seed technology, soil laboratories and post-graduate training overseas. The eight Agricultural Development Divisions (ADDs) receive an annual sum of aid funding tied to adaptive field trial work.

Annex 3-d

VII. The role of the university

The Bunda College of Agriculture, University of Malawi is 17 years old and it has four departments viz. Agricultural Engineering, Crop Production, Animal Production and Rural Development. It trains students for a diploma (3 years) and a general B.Sc. degree (further 2 years) in agriculture, with no optional specializations. There are no honors degrees nor postgraduate course. The teaching staff establishment of 45 is composed of 50% local and 50% expatriate members. Students number about 400 all of which read for the 3-year diploma course. A fourth to a third of those who are successful are selected to continue for the B.Sc. degree course (2 years more). Diploma graduates who go into the field may return to complete the further 2-year training for the B.Sc. degree. The curriculum is currently being revised to introduce specialization.

There is no research subvention from the Ministry of Agriculture, but a part of the University research grant (only K40,000) is allocated to the Agriculture Faculty to support research. The department of Crop Production has an active research program on Phaseolus bean and it is receiving financial support from the State University Bean and Cowpea CRSP with USAID/Washington, DC. The U.S National Academy of Science is interested in supporting agro-forestry/bio-fertilizer work through grant-funding. Livestock husbandry studies with pigs, cattle (beef and dairy) are ongoing. Joint research with the commodity-funded tobacco program is going on into methods of flue-curing (energy source, energy efficient and drying systems).

There are other staff research projects tied to personal interests rather than national needs, but the Faculty is open to undertaking commissioned research where adequate funding is provided.

VIII. Publication of research information

There is no national agricultural research journal in Malawi but agriculture-related articles are published in the Malawi Journal of Science, an organ of the Association for the Advancement of Science in Malawi.

Scientists are free to publish their results in international research journals. Otherwise, there are in-house subject research seminars which are summarized by national project (programme) coordinators as information on which to base (a) further research and (b) farmer information to put into farmer field days and farmer field demonstrations. Additionally there is an annual research report and specific research and extension bulletins and circulars. Regular use is made of the radio for disseminating new information.

Of these publications, the annual research report is the only one that is circulated outside Malawi on a regular basis.

Annex 3-d

IX. Interactions between SADCC member countries and international organizations in the field of research

Malawi is in a strong position in the area of bilateral cooperation with international organizations. This is less so in regard to regional cooperation with other country programs since the break up of the Federation with Zambia and Zimbabwe, and the greatly reduced activities of SARCCUS.

When SARCCUS was active, technical meetings were frequent and formed a regular forum for discussion. There were a number of technical committees in many areas that met regularly and meetings were rotated around all member-countries. An example of coordination quoted was that of nurseries for variety testing of maize and wheat; similar activity was planned for bean and groundnut but it did not materialize. Whilst retention of membership of SARCCUS is now under discussion in Malawi, it is hoped that they will be able to retain scientist to scientist contact.

There are associations with regular organizations (not confined to SADCC countries though) such as the OAU/STRC Phytosanitary Commission and the Red Locust Control Organization for East and Southern Africa. The latter now covers red locust but has recommendations to deal also with the migratory brown locust, army worm, tsetse fly and bird pests, e.g. Q. quelea, although currently it lacks funds for this expansion.

Malawi has its own plant quarantine station based at Bvumbwe which may be moved to Lilongwe, with its large international airport. The OAU/STRC has shown interest in upgrading it to become a regional station and the Government of Malawi is amenable to this proposal. It would then serve SADCC countries (as well as others), replacing to some degree the East Africa Plant Quarantine Servi e at Muguga, Kenya which is no longer active regionally. Such a quarantine center for the region is essential in respect of the regional grain legume programmme centered in Malawi (and other regional programs), for the importation of germplasm.

The last regional cereals meeting was held in Tanzania in 1976 and is said to be in need of revival. In 1980 Malawi held a regional bean workshop at which support was forthcoming for a revival of both regional cereal and bean workshops.

Malawi has a number of bilateral relationships with international research centres and organizations. These are summarized briefly.

CIMMYT — Exchange of wheat and maize germplasm and cooperation with the FSR training activities. CIMMYT is providing assistance in organizing and carrying out farming systems research.

IITA — Support for cowpea/cassava nurseries and in maize (variety testing), training at IITA in crop agronomy, fertilizer use and seed technology.

ICRISAT — Support for training in groundnut, pigeon pea, chickpeas and sorghum production. Opened a regional sub-station for groundnut research which CDA proposed be converted to a regional grain legume project.

ILRAD — Support with vaccine to combat animal diseases.

CIAT — Support with phaseolus beans to become part of the grain legume program; University of Malawi bean research will also become a part of this programme.

ILCA — Support for small farm animal power and small farmer dairy. This centre has recently had a team in Malawi exploring areas for greater contact.

IITA — There is an IITA project concerned with the biological control of the green spider mite and mealybug pests. Reportedly natural predators for these imported pests are not present in the region. This work would be applicable to other SADCC member countries, i.e. Tanzania.

IRRI — Despite the fact that Malawi is a major rice producer in the region and exports this grain to neighboring countries, the activity of IRRI has, until recently, been limited to sending out new rice varieties for testing in the country. There has been no training input to date, but Malawi will be attending a workshop in IRRI for the first time, later this year. Staff of IRRI have visited Malawi.

CRSP(USAID) — Michigan State University is involved in a bean and cowpea research project with the Department of Crop Production, Bund College of Agriculture, University of Malawi.

X. SADCC regional centre activities and functions

There was general agreement with the functions of the coordinating centre as summarized in the team's check list, with some additions. Particular emphasis was placed upon the availability to the center of flexible funding which would enable workshops, seminars and meetings on research subjects/areas of regional significance to be rotated around regional member countries.

Other suggested center activities were:

- the utilization and processing of available meteorological data in the region to map areas with similar climatic parameters in as great a detail as possible.

- promotion and development of uniform standards of seed certification and quality throughout the region.

- training of scientists and experiment station management staff in development of management of experiment station.

- promotion of uniform, high standards of plant and animal quarantine procedures in the region. Development of regional facilities will be an objective c.f. report on upgrading of the Malawi plant quarantine facilities. The compilation of a regional list of major pests and diseases to be guarded against, in the form of a loose leaf, color-illustrated, handbook. The centre could serve with advantage as the communications link for disseminating early warning information on animal disease outbreaks, plant pest and disease outbreaks.

- small biometrics centre for processing data and advising on experimental design and layout for plant, animal and laboratory experimentation. (Refer later in this report for Malawi comment on this).

In general terms the centre should seek to mobilize regional expertise for 'in house' consulting and advisory duties, evaluation of progress in research. It should serve fundamentally to promote and catalyse cooperation to strengthen national research.

There was unanimous agreement that the permanent staffing of the center should include technical expertise in both crop and animal areas; representation in either one or the other was considered quite unsatisfactory. Furthermore, there was some expression of preference for the animal representation to be in the area of veterinary medicine and livestock diseases. To be too small would be dangerously ineffective.

In discussion of research management training it was learned that ICIPE, which is based in Nairobi, Kenya, has already run workshops on research management and finance, and that they were currently considering entering into the field of research management training.

The question was raised of the relationship between the centre and member countries on regional aid in an area for which nationally acquired funding was obtained on bilateral terms. Malawi has obtained substantial funding over a ten-year period for reorganization of research, restructuring and strengthening to include eight adaptive research teams which include recurrent expenditure. This is expected to produce one of the best (if not the best) national research services in Africa.

Another question concerned the manner in which organizations that cover a regional grouping different to that of SADCC, will interact with the center. How will they obtain entry and liaise with the SADCC countries to involve the center?

Malawi considered that in research there was a need to remove apparent inter-international research centre competition for national recipients; the centre should get together first before discussing independent outreach programs at the national or regional levels. Malawi has decided that for its regional grain legume program, it will take materials from all centres e.g. CIAT, IITA and ICRISAT etc.

The British Development Division in Southern Africa, which is based in Lilongwe, pointed out the need for an early warning system about major animal diseases, plant diseases and plant pests in the SADCC region. It was suggested that the centre should consider this activity e.g. rinderpest or foot and mouth disease outbreak notification, movement of grain borer infections in stored maize, movement of green spider mite and mealybug of cassava and of tobacco spider mite.

A number of matters were noted in discussion with the Principal of the Bunda College of Agriculture, University of Malawi, which would come within the remit of the centre if it were to concern itself with training of research staff in the region. These were:

(i) technology transfer training courses for agricultural extension and rural development. The constitution within the SADCC region of a strong training centre in this area by drawing together an overseas university, long-term multinational funding and a national university e.g. Agricultural Extension and Rural Development Centre, University of Reading, U.K., CDA donor and University of Malawi.

(ii) In a like manner foster the establishment of pre-eminent training strength in specific relevant subject areas, at single universities throughout the region, with particular reference to taught, post-graduate M.Sc. degrees.

(iii) The Bunda College of Agriculture, University of Malawi has suffered at the end of aid project input, from the problem of inadequate local recurrent finance with which to maintain and continue what was established and achieved during the project. This problem arises with agricultural research, development, extension and training projects. The solution must be in recurrent finance support either from the original donor or from a further donor.

XI. National contributions to regional cooperation in agricultural research

When the national plant quarantine station is upgraded to become a regional station, Malawi will be in a position to offer a regional plant quarantine service to SADCC member countries as a contribution to regional cooperation in agricultural research.

Annex 3-d

XII. Organizations and persons contacted

A. Ministry of Agriculture

1. J. T. Legg, Chief Agricultural Officer

2. D. R. B. Manda, Assistant to Chief Agricultural Officer

B. Agricultural College, Bunda, University of Malawi

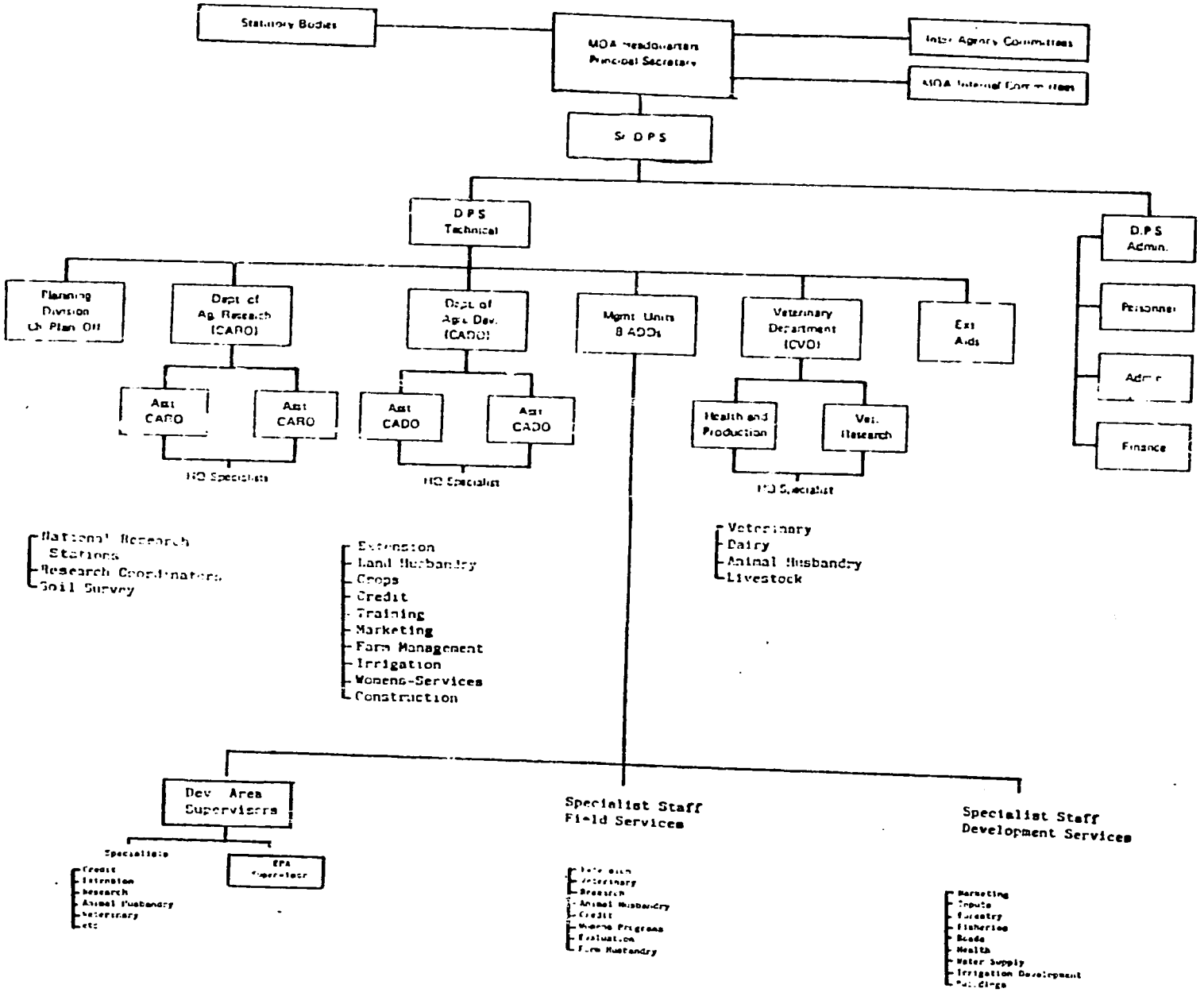
1. Prof. Chirmphamba, Principal

C. British Regional Development Division of Southern Africa

1. J. T. Salmon, Advisor

# MALAWI

## Ministry of Agriculture, Revised Organization Chart



# PRESENT ORGANISATION

C A R O (HQ)

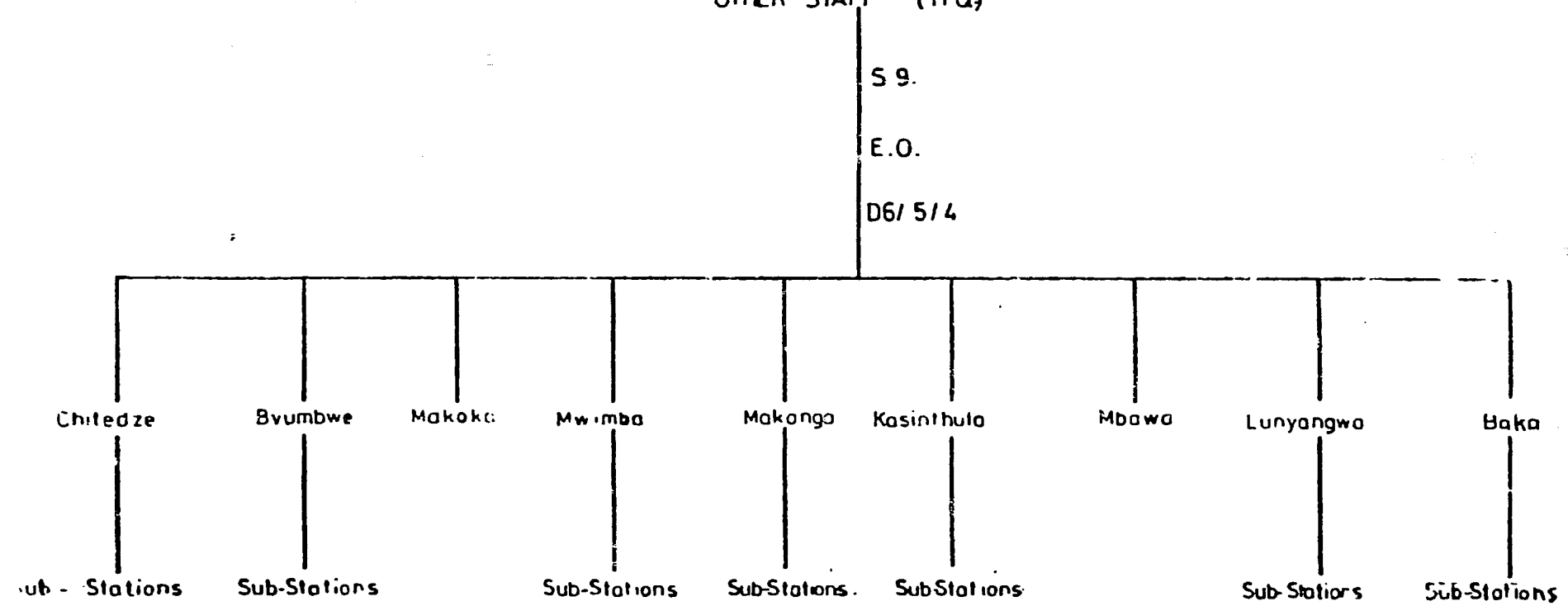
ASST C A R O (HQ)

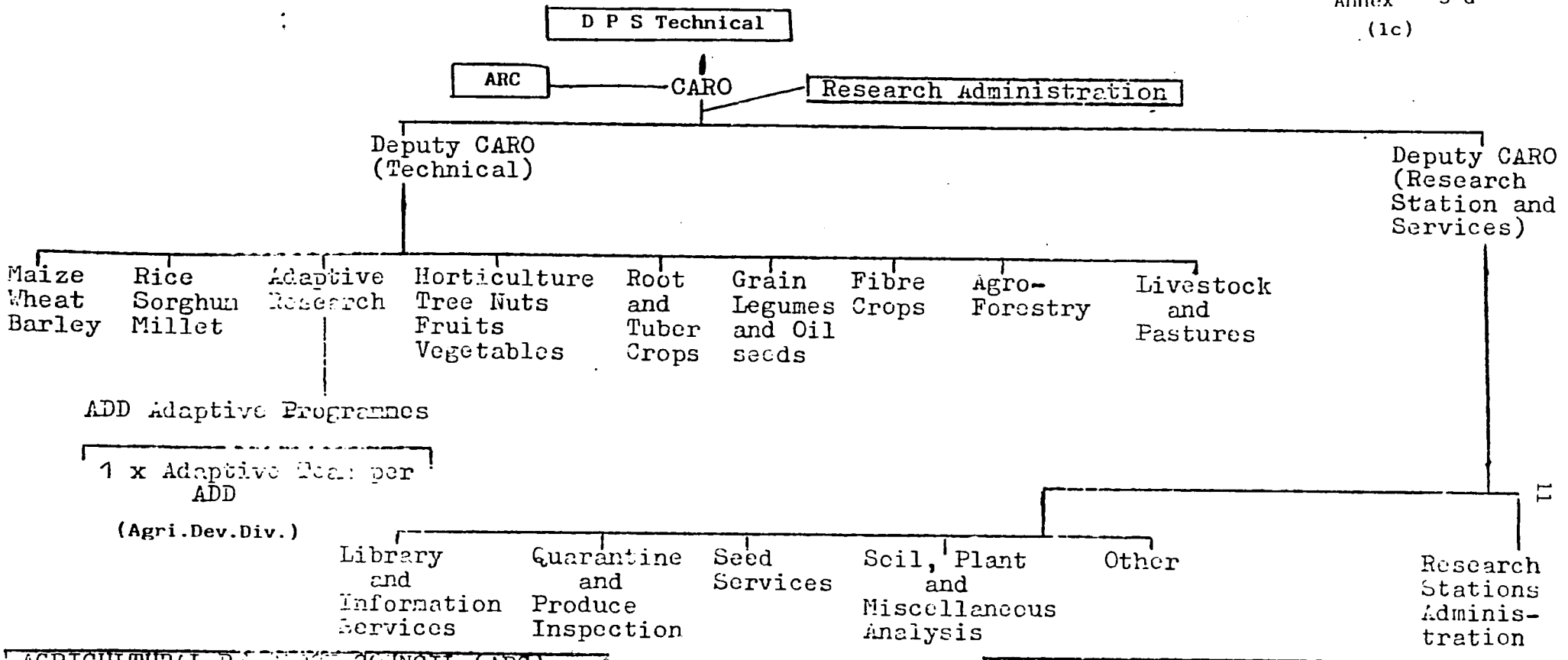
OTHER STAFF (HQ)

S 9.

E.O.

D6/ 5/4




D P S Technical
ARC
CARO
Research Administration
Deputy CARO (Technical)
Deputy CARO (Research Station and Services)
Maize
Wheat
Barley
Rice
Sorghum
Millet
Adaptive Research
Horticulture
Tree Nuts
Fruits
Vegetables
Root and Tuber Crops
Grain Legumes and Oil seeds
Fibre Crops
Agro-Forestry
Livestock and Pastures
ADD Adaptive Programmes
1 x Adaptive Research per ADD
(Agri.Dev.Div.)
Library and Information Services
Quarantine and Produce Inspection
Seed Services
Soil, Plant and Miscellaneous Analysis
Other
Research Stations Administration
AGRICULTURAL RESEARCH COUNCIL (ARC)
Principal Secretary MOA
National Research Council
Economic Planning Division
Chief Agricultural Officer MOA
Chief Agricultural Research Officer
Deputy CARO's
Chief Projects Officer
Chief Veterinary Officer
Bunda College
Chancellor College
Estates Advisary Board
Others as required
RESEARCH ADMINISTATION
Administrative Officer
Financial Controller
Research Economist
Secretaries and Support Staff

Annex 3-e

# AGRICULTURAL RESEARCH IN MOZAMBIQUE

## I. The components

The Ministry of Agriculture of Mozambique is divided into five national directorates. (See attached organigram). Agricultural research falls under the National Directorate of Agrarian Technics (Direccao Nacional Tecnica Agraria). There are three institutes: INIV, IREMA and INIA.

INIV, (the Instituto Nacional de Investigacoes Veterinarias) dedicated mainly to studies of animal diseases, diagnostics and vaccine production. IREMA (Instituto de Reproducao e Melhoramento Animal) the Institute of Reproduction and Animal Breeding, is concerned mainly with breed improvement through crosses. In the near future it will do research on nutrition. The institute has several stations located throughout the country.

### A. INIA (Instituto de Investigacoes Agricolas), The National Institute of Agricultural Research

INIA is responsible for agronomic and crops research, and is divided into departments. It has several regional centres and also carries out some experimentation at the state farms. The main research is on soils, rice, maize, wheat, sorghum and, in lesser degree, on soya beans, millet, grain legumes (Phaseolus, Vigna and Cajanus), cassava, sweet potatoes, sunflower and sesame.

### B. Faculty of Agriculture, University of Eduardo Mondlane

The Faculty of Agriculture has a research project on groundnut improvement funded by the IDRC. The objectives of research are the identification of high yielding varieties adapted to different ecological zones of the country and the improvement of cultural practices. The project collaborates with ICRISAT scientists in India and Malawi, and the national program in Zimbabwe.

## II. Organization

As is represented in the following organigram, INIA is directly under the National Directorate of Agrarian Techniques (DNTA) which is under the Ministry of Agriculture. INIA is responsible only for crops, as livestock is under INIV, and Forestry is under the National Directorship of Forestry.

INIA is organized by commodities as well as disciplines, and carries out the research on a geographical basis, using the state farms and cooperatives for the validation of technology. Once it is validated, adaptive research/demonstrations are carried out with the small farmers and also with the private sector.

There are only 30 researchers, of which the main proportion are expatriates. Most of the national researchers are at the technician level.

III. Research program priorities

Research priorities are given to food crops such as maize, sorghum, rice, wheat and millet. Grain legumes are also considered important and work is done with Phaseolus, Vigna and Cajanus.

Groundnuts are also an important crop. At present there is a great need of seed, since, due to the recent drought and diseases, most of the seed was lost. Other crops which are also important are cassava, sweet potatoes, sunflower, soya beans and sesame.

IV. Publications

The organization in charge of publications is called CEDASPE (Centro de Documentacao das Pesquisas). At present it is producing only reports, but there are plans in the near future to publish a research journal every three months. This publication will be distributed within and outside Mozambique.

V. Interaction of INIA with other national systems in the SADCC region

The interaction of INIA with other national research systems is very informal. The main interaction has been with Zimbabwe, which consists of infrequent visits to research programs. However, even this contact is considered weak. Some researchers are planning to attend regional meetings, such as for the Research Project No. 1 "Improved Land and Water Management Systems", in which they are interested. There is no monetary restrictions for attending these meetings, the main restriction being the shortage of researchers.

VI. Cooperation with other international organizations

INIA has had cooperation from international organizations such as CIMMYT, INTA of Argentina, the Yugoslav Maize Research Institute, IITA, ICRISAT, and Cuba Research Institute.

VII. Checklist of functions of the coordinating centre

1. Maintenance of up-to-date records of agricultural development policies, production targets and reviews.

   Mozambique does not want the centre to be converted into a data bank. They consider certain research information to be restricted to their country which cannot be shared with other countries.

They agree that information, such as from varieties trials, and available technology, can be given to other SADCC countries. They think that the breeders rights is an obstacle for the cooperation of the SADCC countries. They are not willing to pay royalties for the use of varieties.

2. Assist with the reviews, at regular intervals, of national and international research programs in the region.

They agree with the need for review of regional programs, however, in the case of national programs, they would be only at the request of the country. They do not want the Centre to become large and bureaucratic with the tendency toward centralized decisions. They want the Centre to provide the services required by the countries.

3. Maintenance of an inventory of agricultural research workers, research projects, and resources for research.

In general they are in agreement with this point, but with the same restrictions given earlier. They are not willing to give information on budgets.

4. Promote continuous and rapid interchange and utilization of technical and scientific information by:

a) technical journal and newsletter

b) regional meetings/conferences/workshops

c) exchange of visits by specialists, scientists and technicians.

They are in agreement in this point, but are apprehensive about the frequency of seminars and conferences, considering the shortage of human resources.

5. Promote and facilitate concerted studies of problems common to several or all countries, and the initiation of coordinated, cooperative resolutions of such problems.

They are in agreement with this point and feel that it is very important, especially in the case of crop diseases.

6. Promote coperation in training and career development of scientific and technical personnel.

Mozambique considers this to be the most important function for the Centre. They feel that training should be focused on the medium level technicians and should be different from the classical approach. In-service training would be very useful. The training should be done in consultation with the research

GV

directors, and according to the needs of each country. The training should be given in Portuguese, in the case of Mozambique. Training is considered of first priority, because they cannot send their personnel for training at the international centres because of the lack of higher degrees, equivalent to the B.Sc., and also the lack of knowledge of the English language.

7. Encourage free exchange and cooperative evaluation of plant and animal germplasm and improved material.

   They are in agreement and feel that there already exists interchange of materials. However, they feel that the Centre should not encourage the concept of breeders' rights for the varieties to be used.

8. Promote effective interactions with the international agricultural research centres and similar organizations interested in working in the region.

   They feel this to be an important function to be carried out by the Centre. They will appreciate having more information about the services that can be obtained from the international centres. They also feel that the Centre can help to identify certain projects and advise about the needed consultants and where to find them.

IX. Other considerations

They are not concerned about the name of the Centre. They feel that the Centre should have multi-donor support for its establishment and operation. They do not want to get free from one dependency and fall in another.

They feel that at least one of the senior staff members of the Centre should speak Portuguese.

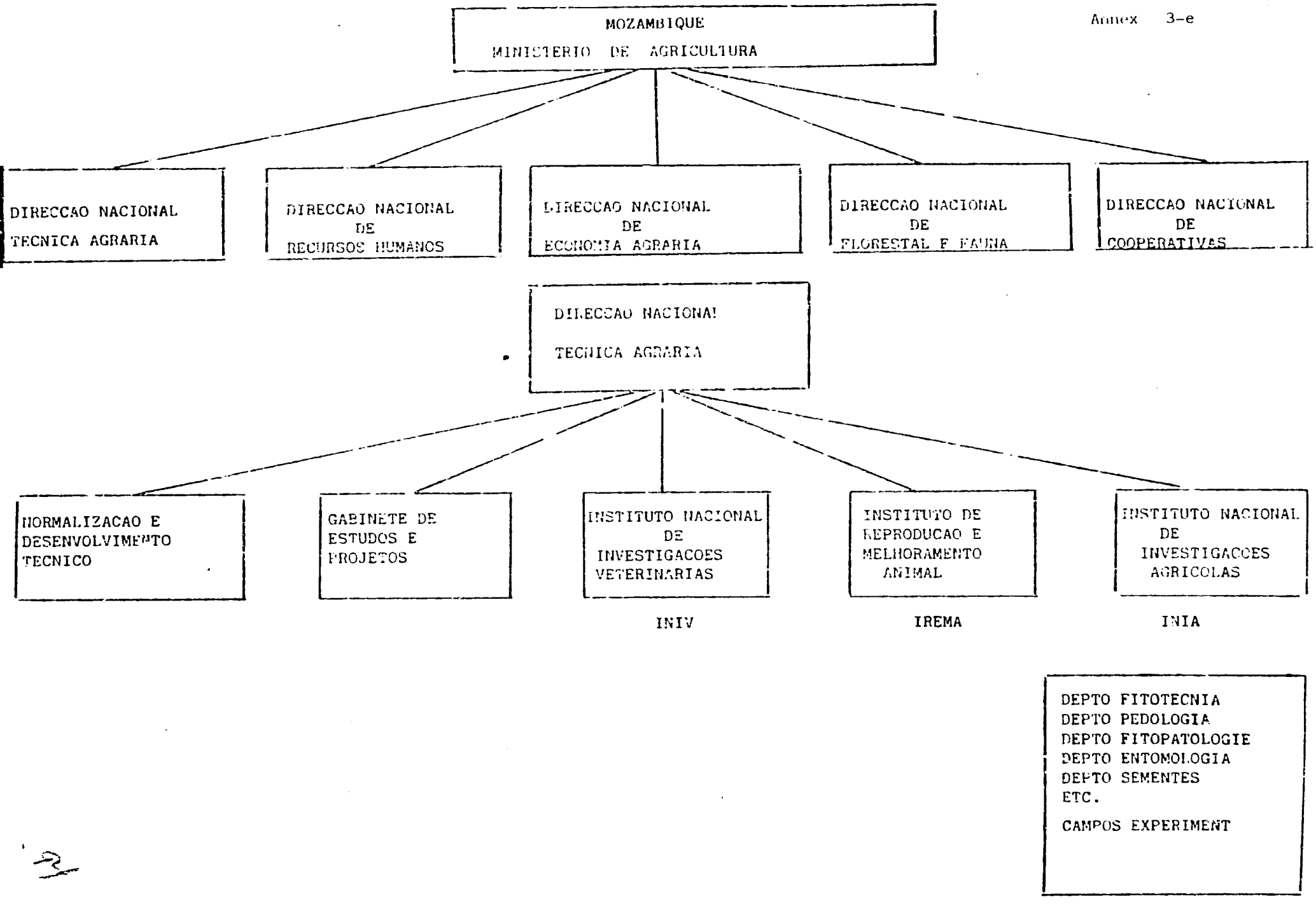
Also, the publications, newsletter, etc., as well as the training material should be in Portuguese.

The Extension Service does not exist as such at the moment, but they are thinking in the future that extension will be tied to research.

Seed production is, at the moment, above all priorities. This activity is handled by the "Empresa Nacional de Sementes" which is under the Ministry of Agriculture. There are seven seed plants.

X. Persons interviewed

J. Rodriguez Pereira - Director of Research, INIA
Rui Ribeiro - Secretary to the Minister of Agriculture
Fernando De Pinho Morgado - Director of INIV
J. Samson - Foreign Affairs, Ministry of Agriculture


MOZAMBIQUE
MINISTERIO DE AGRICULTURA
DIRECCAO NACIONAL TECNICA AGRARIA
DIRECCAO NACIONAL DE RECURSOS HUMANOS
DIRECCAO NACIONAL DE ECONOMIA AGRARIA
DIRECCAO NACIONAL DE FLORESTAL E FAUNA
DIRECCAO NACIONAL DE COOPERATIVAS
DIRECCAO NACIONAL TECNICA AGRARIA
NORMALIZACAO E DESENVOLVIMENTO TECNICO
GABINETE DE ESTUDOS E PROJETOS
INSTITUTO NACIONAL DE INVESTIGACOES VETERINARIAS
INSTITUTO DE REPRODUCAO E MELHORAMENTO ANIMAL
INSTITUTO NACIONAL DE INVESTIGACOES AGRICOLAS
INIV
IREMA
INIA
DEPTO FITOTECNIA
DEPTO PEDOLOGIA
DEPTO FITOPATOLOGIE
DEPTO ENTOMOLOGIA
DEPTO SEMENTES
ETC.
CAMPOS EXPERIMENT

# AGRICULTURAL RESEARCH IN SWAZILAND

## I. The components

### A. Department of Agricultural Research and Planning

The directorate of this Department is based in the Ministry of Agriculture's Headquarters in Mbabane. It is responsible for policy formation in Agriculture and thereby for identifying areas in which research and extension efforts should be concentrated. The main policy of the Department is self-sufficiency in food, expecially the major staples - maize being one of them. The research effort is directed at solving agricultural problems in the smallholder farms in the rural areas. The main aim is to develop an organizational framework and a program of applied research which is suited to the needs of the farmers in the Swazi National Land (SNL), and not so much to the needs of the large scale farmers in the Individual Tenured Farm (ITF) type agriculture.

The Department of Research and Planning is one of the five departments of the Ministry of Agriculture. The others are Agriculture and Extension, Veterinary Services, Cooperatives and Marketing, and Administration. The Research and Planning Department is composed of the Research Division, an Economic Planning and Analysis Section, a Land Use Planning Section, a Land Valuation Section, a Land Tax Valuation Section, and a Marketing Advisory Unit. The Economic Planning and Analysis Section is responsible for carrying out crop profitability studies on the basis of technical data provided by the Research Division.

In the third National Development Plan, the Government considers that efficient research is an essential adjunct to progress in agriculture and the success in the rural development program.

Specifically, major efforts in research are to be directed into the following fields:

(a) Animal Production

- Find new methods of improving the yield of range and pastures.

(b) Crop Production

- Find new methods of:

  (a) improving the yield of crops

(b) preventing damage by pests and diseases

(c) increasing soil fertility

(c) Other Fields of Importance

(a) Mechanization

(b) Appropriate farming systems

B. The Research Division

This Division is charged with the responsibility of conducting research in the fields already mentioned. Most of the research work is conducted at the Central Research Station at Malkerns in the Middleveld which has a rainfall of 750 -1,200 mm per annum and altitude of 350 to 1,000 m above sea level. The rest of the research is undertaken at the following research stations:

(a) Hebron and Mangconngco in the Highveld with rainfall ranging between 1,000 and 1,750 mm per annum and 1,000 - 1,800 m above sea level,

(b) Mhlangano and Luve in the Middleveld with rainfall and altitude similar to the environment at Malkerns, and

(c) Big Bend and Swaziland Irrigation Scheme in the Lowveld with rainfall ranging between 500 and 800 mm per annum and altitude of between 60 and 375 m above sea level.

Finally, some additional cooperative trial programmes are undertaken on large and small scale farmers' fields throughout the country. This spread of activities is made necessary by the diversity of the ecological zones within the country.

The main areas in which research is concentrated are:

(i) Crop agronomy dealing with:

(a) cereals - maize, sorghum and wheat;

(b) grain legumes - groundnuts, beans, soya beans and bambara groundnuts;

(c) oil seeds - cotton, castor, sunflower and sesame;

(d) root crops - Irish and sweet potatoes: and

(e) others - tobacco

(ii) Horticulture dealing mainly with:

(a) Fresh vegetables - carrot, cauliflower, cabbage, egg plant, pepper, onions and tomatoes;

(b) Processing and storage of some fruit and vegetables such as tomatoes, asparagus, youngberries, etc.; and

(c) Miscellaneous fruits such as strawberries.

(iii) Veld and pasture management

This deals mainly with the following:

(a) Plant introduction and testing;

(b) Nutritional studies; and

(c) Evaluation of management techniques with the ultimate testing of productivity on a field scale using livestock as the final yardstick.

(iv) Dryland crop production

Studies are made of farming systems which can bring maximum agricultural productivity while utilizing most effectively the little rainfall that is obtained annually.

(v) Soil fertility and crop nutrition

Swaziland seems to have a lot of acid soils. The use of lime under each ecological zone seems to deserve a lot of attention. Macro and micro nutrients are also being studied.

(vi) Soil Chemistry and Soil Physics

These fields receive attention.

(vii) Plant Pathology and Entomology

These are important areas which have received attention in connection with citrus pineapple, cotton, rice, groundnuts, beans, wheat, gladioli, and vegetable production.

(viii) Research in Cotton

This is partly financed by the cotton industry through a levy on seed cotton produced and is centered on:

(a) Cotton breeding and

(b) Cotton entomology.

(ix) Forestry Research.

This is undertaken by the forest industry.

(x) Pineapple Research.

Like forestry research this field is fully funded by the pineapple industry although facilities are provided by the Central Research Station at Malkerns.

(xi) Biometry.

There is an established post of a biometrician and the duties are to:

(a) assist in the design and analysis of the Division's field trial programmes,

(b) provide assistance in agricultural survey and census work of the Ministry of Agriculture, and

(c) provide lectures in biometry within the University.

At the time of the visit, little or no research was being undertaken in animal diseases and in fisheries.

The major constraints to efficient agricultural research system are lack of funds for research and lack of continuity of research projects. The latter is caused by shortage of trained local staff and quick turnover of expatriate staff.

Finally, it might be pertinent to point out that since the Central Research Station is only a few kilometres from the Faculty of Agriculture of the University of Swaziland at Luyengo, research staff assist in teaching some courses to undergraduates and diploma students.

C. The National Research Council

The National Research Council is charged with the responsiblities of establishing research priorities in all disciplines, including agriculture. The research staff are expected to formulate programmes to satisfy these priorities. Since the National Research Council does not have a permanent Secretariat, its impact in directing and coordinating research is not being greatly felt.

D. Research by the University

There is a Social Science Research Unit in the University of Swaziland. Its establishment was supported by the Netherlands Government. It has undertaken research in smallholder farms which complements that being done by the Research Division of the Ministry of Agriculture. Some research in intercropping is being undertaken by staff in the Faculty of Agriculture.

E. Other Organizations which undertake agricultural research

Various industries in the country undertake commodity-oriented research on crops which include forestry, pineapple, citrus, sugar cane and cotton.

II. Priorities and strengths

Farm management data being collected by the Social Science Research Unit in the University, by the Ministry of Agriculture under the Rural Development Programme, and by the Farming Systems Research Project, will be of interest to all SADCC countries. Swaziland has done well in vegetable production and has produced drought resistant varieties of carrots, cabbage, and tomatoes, and might offer assistance in this field.

III. Publications

Agricultural scientists in Swaziland do not have a journal within the country in which to publish their research findings. The Social Science Research Unit in the University of Swaziland, however, publishes Occasional Research Papers. Similarly, the Extension Wing in the Ministry of Agriculture publishes bulletins which are of value to extension workers and farmers. The research workers in the Ministry of Agriculture welcomed the idea of having an agricultural science journal for the SADCC countries.

IV. Interaction of the national agricultural research system with other national systems in the SADCC region

The interaction of staff in the Research Division with counterparts in other SADCC countries is mostly on an informal or personal contact basis. There has been some exchange of tobacco and cotton varieties between Swaziland and Zimbabwe, as well as some exchange of soya bean varieties with Mozambique. Recently, Directors of Research and the Chief Research Officers from SADCC member countries have been meeting regularly as a Consultative Technical Committee (CTC) of the SADCC.

V. Cooperation with and research support by organizations outside of the the SADCC region

The Department of Research and Planning cooperates with CIAT, IITA, ICRISAT, CIMMYT and CIP. The organizations which provide support to agricultural research include: USAID, IDRC, IFAD, ISNAR, FAO, IFS, the Belgium Government, the Netherlands Government, ODA and WHO.

VI Views of the national agricultural system on regional cooperation

In general, most persons interviewed suppported the idea of the need for greater cooperation in agricultural research in the region. Agricultural scientists in Swaziland would gain by having access to publication facilities, exchange of varieties of crops and animals, and above all of collaborating in manpower development and training. They pointed out that duplication of research activities would be avoided and costs of undertaking agricultural research in several SADCC countries would be reduced.

The Chief Research Officer had just returned from a meeting of the African Chapter of the International Federation of Agricultural Research Systems for Development (IFARD) which was held at IITA (Ibadan, Nigeria) between 6th and 10th June, 1983. The congress discussed cooperation between National Agricultural Research Systems (NARSs) and between International Agricultural Research Centres (IARCs) and NARSs. It would seem therefore that regional cooperation in agricultural research has a support from the whole of Africa. Swaziland pointed out problem areas for which exchange of information and/or joint studies might be undertaken by SADCC countries, such as in the problem areas of overgrazing and drought power. There will be need also to work out uniform seed certification regulations in order to facilitate the exchange of seed varieties. Caution was expressed, however, that it might be very costly if an attempt was made to send the newsletter to individual scientists instead of distributing them to the libraries. It was also pointed out that although one type of newsletter might suffice at the beginning, later there might be need to have three editions, one for each of the disciplines; crop science, animal science and extension technology.

Swaziland was willing to share its experiences with other SADCC countries in the areas of farm management and farming systems studies involving smallholder farms. This work is being undertaken by the Social Science Research Unit (SSRU) which is based in the University College of Swaziland, and under the Rural Development Research Programme (RDRP) which is based in the Ministry of Agriculture. Several research reports have been published by staff working in the SSRU on the factors affecting agricultural production in the above farms. The findings in these reports might be of relevance to some of the SADCC countries.

Annex 3-f

VII. Organizations and persons contacted

a. Ministry of Agriculture

1. N. Dlamini (Miss), Director of Research and Planning
2. F.M. Buckham, Chief Research Officer, Malkerns
3. J. Pali - Shikhulu, Agronomist (Field Crops) Malkerns
4. D. Gama - Horticulturalist, Malkerns
5. B. Maphalala - Farm Management Economist, Malkerns
6. E.M. Mdlangamandla - Farm Manager, Malkerns

USAID/Farming (Cropping) Systems Research and Extension Training Project

7. C. Seubert - Agronomist
8. D. Grenoble - Horticulturalist
9. R. Freud - Agricultural Economist
10. G. D. Bengtson - Information Specialist
11. C. Sachs - Visiting Rural Sociologist
12. M.N. Ngwenya - Agricultural Officer - Soil Testing Service
13. S.S. Dlamini - Agricultural Officer - Crop Storage
14. L.P. Dlamini (Miss) - Research Officer - Crop Storage
15. W.M. Nxumalo - Agricultural Officer - Extension
16. KI-Ho Suh - Development of Quality Seed Production Project - FAO Supported

B. University of Swaziland

1. G.T. Magagula - Dean, Faculty of Agriculture, Luyengo
2. F. de Vletter - Director of Social Science Research Unit

VIII. Documents consulted

1. Agricultural Research in Swaziland by C.E. Brook (Mimeo)

Annex 3-f

2. Simple Survey of Maize Growing in Swaziland by Margo Russell, Nikiwe Mbatha and Vincent Sithole. Research Paper No. 1 Social Science Research Unit (SSRU). University College of Swaziland.

3. The Smallholder Cotton Sector in Swaziland. Some thoughts for future research. By T. J. Kliest. Res. Paper No. 2 SSRU. Univ. College of Swaziland.

4. The Rural Development research project (RDRP). Directions for 1983 - 1984. By M. Russell, F. De Vletter and T.J. Kliest. Res. Paper No. 4 SSRU, Univ. College of Swaziland.

5. Boundaries and Structures in the Swaziland Homestead. By M. Russell. Es. Paper No. 6 SSRU, Univ. College of Swaziland.

6. The SSRU and RDRP in 1983 and beyond. By M. Russell and H. Tieleman. Res. Paper No. 7 SSRU, Univ. College of Swaziland.

Annex 3-g

# AGRICULTURE RESEARCH IN TANZANIA

## I. Organization of research

Attached to this country report is an organigram showing the basic organization of the Tanzanian Agriculture Research Organization. TARO is a parastatal organization established in 1980 which plans, coordinates and controls almost all agricultural crops research in Tanzania, with responsibility by the Director General to the Ministry of Agriculture, through the TARO Council. A sister organization, the Tanzania Livestock Research Organization (TALIRO), which is structured on similar lines, is responsible for veterinary and livestock research, to the Ministry of Livestock Development. It is concerned with animal development (husbandry), animal nutrition and pasture research, animal diseases and animal breeding. In size TALIRO is about a quarter that of TARO.

In addition there is a research director in the Ministry of Agriculture who has a significant coordinating role in respect of research and who is responsible for specific projects: the Dakawa rice project; the national coconut development project; Tropical Products Research Institute, Arusha; Horticultural Research and Training Institute, Tengeru; and, Uyole Institute in Mbeya plus the Mbozi and Mitalula stations.

It was noted that in May 1982 an FAO team reviewed the research organizations and the research program for Tanzania.

### A. TARO

Whilst TARO coordinates all research in association with Ministry of Agriculture staff, it does not have administrative responsibility for everything at present. It is believed that it may be given full responsibility in the future.

Development through research is based upon taking results to the farmer. This implies a very close and effective cooperation between research and extension whereby research results - often as a package of practices - pass through on-farm investigation, i.e. village government farms and demonstration. Farmer recommendations follow a study of the farming systems.

The total establishment of research staff, from the Director General of TARO to the Technical Assistant level, is 600 with a country population of 18.3 million on which upwards of 90% are directly or indirectly involved in agriculture.

Total vacancies in this establishment amount to 72. In somewhat more detail, there are 183 research officer (graduate) posts of which 63 are vacant; 417 technical assistant (Diploma/Certificate) posts of which nine are vacant. However, these technical assistant

posts are almost entirely field positions and there is a very serious shortage of qualified laboratory (scientific) assistants at present; i.e. only two or three in all.

There are nine staff overseas in Ph.D. programmes and 23 in M.Sc. programmes in crops. These training programmes are mainly being undertaken in the USA and the UK. There is a real need for laboratory technician training; i.e. in agricultural chemistry, plant pathology, entomology, plant physiology, etc. It was stated that no facilities are available within Tanzania for this type of training at present.

Emphasis for food crops research is on maize, sorghum and millets, rice, phaseolus bean, wheat, root cassava, banana, sugarcane and oil seeds (groundnut, sesame, sunflower and coconut). For maize, rice, sorghum and millets, emphasis is on breeding and agronomy; for wheat it is soil management viz. available crop moisture (dry land wheat farming) in areas of 700 - 850 mm rainfall.

Although bananas are such an important part of the staple diet in several areas of Tanzania, not a great deal of research has been carried out on this crop in the past because of the lack of local expertise. However, one of the main producing areas (Bukoba, W. Tanzania) where bananas are paramount, is said to be threatened by a combination of root nematode and banana weevil infestations.

B. TALIRO

TALIRO, which is a parastatal organization of the Ministry of Livestock Development, conducts research in two major areas, namely, livestock husbandry and animal health. The main Research Institute for animal husbandry is located at Mpwapwa in Central Tanzania. It is supposed to coordinate the work which goes on at the Research Stations which are located at Tanga, West Kilimanjaro, Malya, Kongwa and Sao Hiu. It is expected to cooperate with the Uyole Agricultural Research Centre in research in animal husbandry.

The major areas of research are in crossbreeding of dairy cattle, pasture and range management, crossbreeding of beef cattle and in sheep and goat studies. The main research areas in animal health have been in fields of veterinary parasitology, pathology and microbiology.

The Central Veterinary Laboratory, located in Dar-es-Salaam, is the main centre for veterinary research. It has substations at Mwanza, Arusha, Tanga, Mpwapwa, Iringa, Mtwara and Tabora - these are called Veterinary Investigation Centres. There is a separate Tsetse Research Institute at Tanga.

Staffing the major sections of livestock husbandry and animal health with competent research staff is a major problem at present. As more graduates from the Faculty of Agriculture, Forestry and Veterinary Science are recruited and gain experience in research, this problem of lack of staff will be reduced.

C. The National Scientific Research Council

The National Science Council is headquartered in the Ministry of Economic Development and Planning. It advises the Government on national science policy. It has subcommittees for each of the major sectors of the economy, including one in agriculture and natural resources. The Council sets priorities for research, and research workers are expected to formulate research programmes based on the set priority areas. The Council also disburses funds to research workers in all sectors of the economy once they present well thought-out research proposals. The Council expects to receive at regular intervals reports on the progress of the research and on the expenditure of funds. Because of the smallness of the staff it employs the Council has not been very effective at coordinating research. The progress it has made thus far has been commendable and several international research organizations such as IDRC, SAREC, NORAD and IFS have been channelling funds for research through it. It has a Board of Directors who come from various government ministries, parastatal bodies and from the University. Improvements in staffing could make it a major research coordinating body in the country.

D. The Faculty of Agriculture, Forestry and Veterinary Science, University of Dar-es-Salaam

The Faculty of Agriculture, Forestry and Veterinary Science, founded in 1969, is located at Morogoro, 200 km from the capital, Dar-es-Salaam. It is divided into the Divisions of Agriculture, Forestry and Veterinary Science. The staff in each of the three divisions undertake research in their areas of specialization. The Division of Agriculture comprises seven departments, namely, crop science, animal science, agricultural engineering and land planning, rural economy, agricultural education and extension, soil science and food science and technology. Scientists in the Faculty can apply for research funds to the Research and Publication Committee of the University, the National Scientific Research Council, parastatal commodity organizations, as well as from foreign agencies. As a rule all applications for research funds have to pass through the official channels of the University.

The cooperation between the Faculty and other research organizations in the country is facilitated by the appointment of University staff to the governing councils or bodies of the research orgarizations, and by having University staff sit in the various crop, livestock and forest research committees of these government research bodies.

The Faculty of Agriculture has been cooperating with TARO in implementing intercropping, farming systems, oil seeds, rice and grain legumes research projects. The foreign organizations which have been funding research include IDRC, IFS, SAREC, USAID, NORAD, the Ford Foundation, and the International Atomic Energy Agency (IAEA).

The Faculty has a very strong post-graduate training programme in agriculture, forestry and veterinary science. The Danish Agency for International Development (DANIDA) has been supporting the post-graduate programs in agriculture and veterinary science. The Norwegian Agency to International Development (NORAD) has been supporting post-graduate programmes in animal science, forestry and soil science. Other Governments, including the USA, UK, France, Sweden, the Netherlands, Canada, and Belgium, have been supporting various staff development programmes in the Faculty. The Faculty, as a result of this support, is fairly well staffed and is therefore in a position to train at post-graduate level potential research staff from other SADCC countries.

E. Commodity Research

Commodities that are wholly or partially industry-funded are coffee, tea, sisal and cotton. In principle all commodity crop research is expected to be industry-funded. The most important subject in coffee is selection and/or breeding for resistance to coffee berry disease (Colletotrichum coffeanum var. virulenus) and coffee leaf rust (H. vastatrix).

II. Research funding

Agricultural research in Tanzania is funded 70% by government, 8% by commodity finance (internal) and 22% by external finance. Principal areas of research funded externally are: farming systems; maize, sorghum, millet, wheat and grain legume food crops; soil research and services; and coffee and cashew nut. Post-graduate training overseas is a further area of assistance.

III. Publication of research information

Tanzania has been affected very adversely by the virtual cessation of publication of the East African Agriculture and Forestry Journal. To fill the gap they are about to launch a national journal named "The Tanzanian Agricultural Journal for Research and Development." It would

seem that this journal will be of a similar type to the Zimbabwe Agricultural Journal and would satisfactorily complement a SADCC regional agricultural research journal, which is one of the proposed activities for the SADCC research coordination centre.

Scientists in Tanzania are free to publish the results of their studies in international research journals, but the new national journal should receive strong support. There is the annual research report and farmers information for demonstration and farmers days. The annual research report is the only one of these that is circulated outside Tanzania.

Tanzania scientists may also be members of the Soil Science Society of East Africa which last held a meeting in 1981 (a meeting is planned for 1983). There are office bearers in each country (Tanzania, Kenya and Uganda), but the Society publishes and circulates a newsletter only.

IV. Interaction between national SADCC member countries and international organizations in the field of research

Because of travel difficulties and the time factor it was not possible to obtain detailed information of cooperative and coordinated agricultural research programmes between Tanzania, the several international agricultural research centres and other international organizations.

In the Malawi country report reference is made to the new green spider mite and mealybug pests of cassava introduced from Latin America via Uganda and currently the subject of research (for biological control) by IITA in Nigeria. The Director General of TARO, Dr. J.N.R. Kasembe, is very concerned about this matter and the spread of these pests southward into Tanzania. IITA has already achieved some success with an imported predator (from Brazil) that exerts control on the mealybug, but there has been no success yet with the green spider mite pest. Referring to this and the arrival and spread of the great grain borer (Prostephanus truncatus) which can devastate stored maize, he urged the essential need for regional plant quarantine facilities and welcomed the possibility of the Malawi facilities being upgraded to become the regional facility. He stated that the East African Plant Quarantine Station located outside Nairobi, Kenya, no longer functions regionally. The need for regional animal quarantine facilities, uniform phytosanitary and seed certification standards were also emphasized in support of current and future regional research programs.

Interactions between Tanzania and SADCC member countries in terms of study visits by scientists, holding or attending research workshops, seminars and meetings were controlled by the availability of external funding. The participation of Tanzanian research staff in such activities was very limited.

Dr. J.N.R. Kasembe, who is a member of the governing council of IFARD (International Federation of Agricultural Research Systems for

Development which is headquartered in Hong Kong, with the African Chapter based in Ibadan, Nigeria) and is also the African Representative on the CGIAR, was very concerned for the urgent need to strengthen cooperation between national and international agricultural research centres. He has the responsibility for IFARD (Africa Chapter) or preparing a data base (inventory) of research staff, programmes etc. by late 1984, as well as having to report on IARC's/NARC's cooperation at the November 1983 CGIAR meeting in Washington.

A great deal of this IFARD thrust overlap with the suggested major functions of the SADCC Centre, suggesting that cooperation and working relationships be established early on between IFARD (African Chapter) and the proposed SADCC centre.

V. SADCC regional centre activities and functions

The check list of proposed activities and functions of a centre prepared by the team, was discussed with general agreement to all items. Certain activities were emphasized and some further suggestions were made, as noted here.

Tanzania is in favour of identifying and selectively strengthening existing/potential areas of agricultural training in the different universities of the SADCC region, particularly at the taught M.Sc level, rather than all the countries striving for this independently.

Just as Malawi expressed concern over the geographical location of the proposed centre in Botswana, so did Tanzanian research staff who went on to suggest that Malawi might be a more suitable site.

Tanzania felt that it would be essential to have both plant and animal separately represented by the senior staff at the proposed centre. Technical dialogue (detailed) between a plant scientist and animal researchers and vice versa, would probably be unsatisfactory.

Great interest and strong emphasis was placed upon the proposed centre's function in building up data base and inventory information that would be 'on call' to member countries. The inventories of national research staff, research programmes, objectives, targets and achievements, were considered essential data for identifying areas of cooperation, and research strengths and weaknesses within the region. Very close cooperation with IFARD and its objectives would be highly desirable.

Strong interest was expressed in a biometric unit in the proposed SADCC centre both for processing national research data, for training, and for advice on experimental design and layout. In view of the situation in Malawi in this subject, it might be considered advisable to investigate the possibility of funding and support to raise the Malawi centre to regional action status.

A request was made that the centre start a scientific literature service, i.e. undertake scientific literature searches with the AGRIS, CARIS, etc. reference bases for national scientists, and circulate title pages of international scientific journals. This arises largely from the cessation of these services from the East African central agricultural library at KARI (previously EAAFRO/EAVRO) outside Nairobi, Kenya. It might appear impossible to provide photocopies of title pages where there is no library receiving a very full range of journals, but it might be undertaken through the agricultural section of the international journal "Current Contents" which does just that, i.e, publishes reprinted and reduced size journal - content pages very soon after journal publication.

It was considered very essential that the SADCC CTC's should rotate their meetings around member countries as soon as possible. Circulation in a similar manner of seminars, meetings, etc. was also endorsed.

Coordination of the outreach programs of IARCs in similar crop and work areas, in the national and regional programs, must be considered vital to obtain maximum benefit.

An area of research staff deficiency was identified as technical assistant personnel in the agricultural laboratories. National training facilities are not available at the formal course level but are a recognized need. This may be an area for cooperation within the SADCC region if appropriate funding can be located.

General support was forthcoming for the centre to pursue the utilization of nationally available meteorological data in the region to map areas of similar climatic parameters in as great a detail as possible.

There also was support for uniform regional standards of seed certification, and for regional training of scientists and station managers in standards of field crop experimentation, research station development and management.

Particular support was forthcoming for the centre to act in mobilizing regionally available expertise for consulting, advisory and evaluation work as an alternative to importing such requirements from outside the SADCC region. This was seen as an important opportunity to apply regional resources to strengthen national agricultural research. The possibility of identifying a number of regional crop/subject research program officers from within national staff should be considered. If program workshops, seminars and meetings in specific subjects became a regular regional activity, such persons might act as chairman-coordinators supported by centre staff as executive secretary.

Tanzania is in favour of the centre producing a publication listing current major pests and diseases of plants and animals with particular emphasis on new entries into the SADCC region, possibly as a loose-leaf, colour-illustrated handbook. It also agreed with the value of the centre operating an early warning system for animal and plant disease or pest outbreaks within the regional through the members of the CTC on Agricultural Research.

The centre should compile and maintain an inventory of national aid projects, and donors concerned with research and research training projects.

There was strong interest in animal-powered farm implements for the small farmer. This is recognized as an area of need in Tanzania. The first action of the centre, it was suggested, should be to hold a meeting to survey, summarize and review the present position and needs of the member countries in this field.

VI. Organizations and persons contacted

A. Ministry of Agriculture, TARO

1. J. N. R. Kasembe, Director

2. C. K. Tupa, Director of Finance and Administration

3. M. E. T. Mbaga, Chief Planning and Evaluation Officer

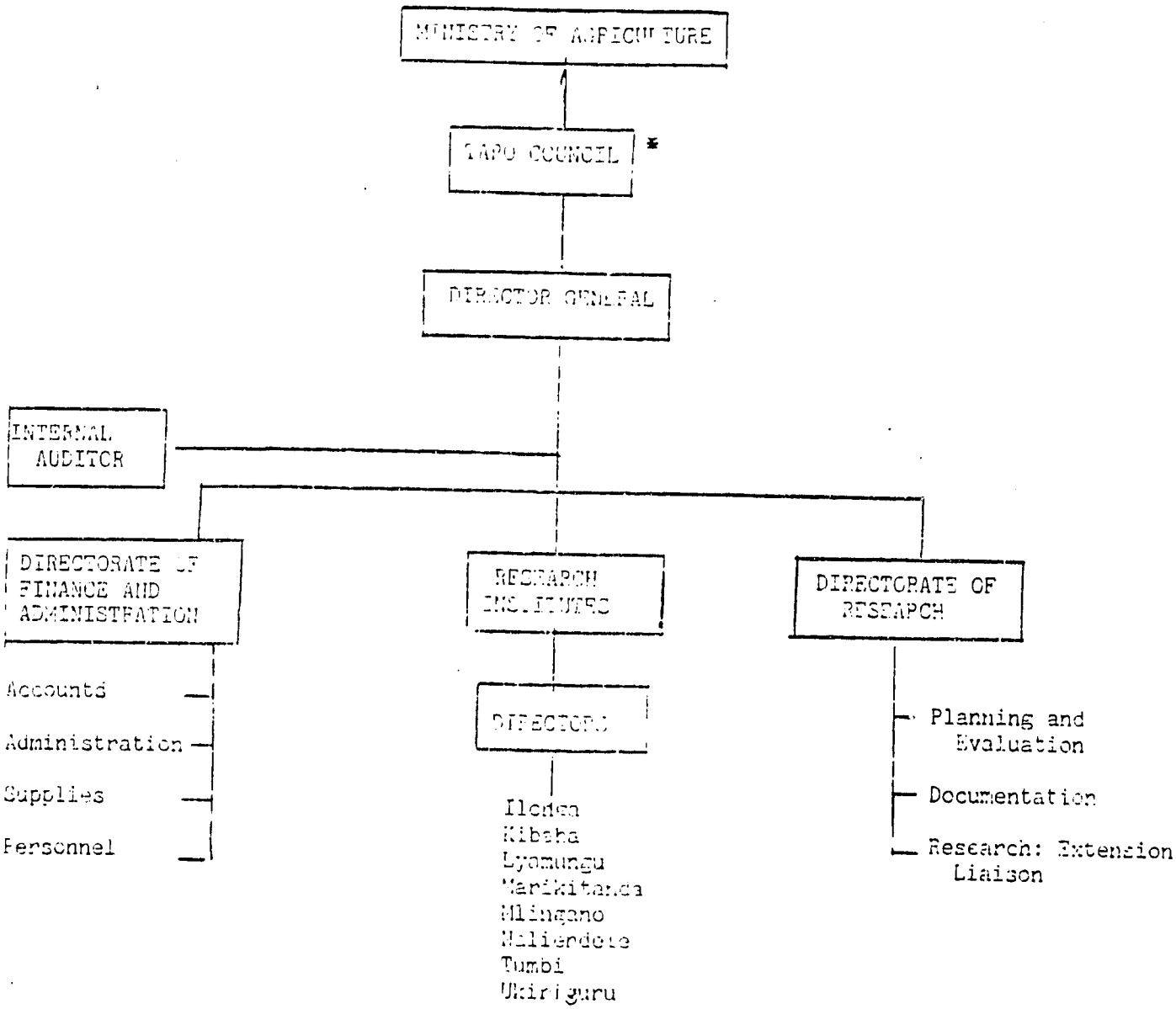
4. Shao, Director, Ilonga Research Institute

B. University of Dar-Es-Salaam, Faculty of Agriculture, Morogoro

1. Demoka, Soil Science

# TANZANIA COUNTRY REPORT

## Organigram of the Tanzania Agricultural Research Organisation




* The Council Chairman is appointed by the President of Tanzania. The present chairman is the Principal Secretary, Ministry of Agriculture.

Members of the Council represent other interested Ministries e.g. Ministry of Livestock Development, University of Dar es Salaam, Tanzania National Scientific Research Council and SALIRO.

TARO is a parastatal organisation established in 1980.

# AGRICULTURAL RESEARCH IN ZAMBIA

## I. The Components

### A. Ministry of Agriculture and Water Development (MAWD)

The MAWD is responsible for the major aspects of national agricultural research, including that on livestock. Animal health-related research is conducted by the Department of Veterinary Services and Tsetse Control, whereas animal husbandry and crops research are the responsibility of the Research Division of the Department of Agriculture.

The Agricultural Research Division is headed by a Deputy Director (Research) who is assisted by a Chief Agricultural Research Officer (CARO) based at the central agricultural research station at Mount Makulu, near Lusaka, and a Coordinator for the Adaptive Research Planning Teams based at Lusaka headquarters. The CARO is in charge of staff and programmes of the national commodity and Specialist Research Teams, and is assisted by a research program coordinator and the commodity and specialist research team.

Research is organized into (a) nine Commodity Research Teams for cereals, oilseeds, fibre crops, root and tuber crops, vegetable crops, tree and plantation crops, tobacco, grain legumes, and animal husbandry and pastures; (b) seven Specialist Research Teams for food storage and conservation, weed control, farm machinery and tillage, plant protection, soil productivity, cropping systems, and irrigation, and (c) Adaptive Research Planning Teams (ARPT), one for each province. The ARPTs conduct systematic studies of traditional farming systems to identify the requirements of farmers and their families. Such studies are used to clarify issues requiring investigation by the commodity and specialist research teams, and hopefully will result in the development of more appropriate technology.

The Research Division also provides services in biometrics, soils, library, and seed control and certification.

### B. University of Zambia School of Agricultural Sciences

Agricultural research in the University of Zambia depends to a large extent on the specific interests of individual staff members of the School of Agricultural Science. There are currently over 25 research projects covering crops, livestock, soils, marketing, farm machinery and agroclimatology. Most of the projects are of short-term duration. Ideas for research come from staff members and are discussed in faculty committees and in the annual research meetings of the Research Division of the MAWD. There is thus effective collaboration with the Department of Agriculture.

C. National Council for Scientific Research (NCSR)

The NCSR is a parastatal organization whose main function is to ensure that national development plans are supported by appropriate research activity. It fulfills this role by advising on and coordinating all scientific research through a series of committees, and also executes research in areas not covered by the technical departments of various government ministries.

The Agricultural and Natural Resources Committee assists the NCSR in determining, on a national basis, the short- and long-term agricultural research priorities. At present the NCSR is itself carrying out agricultural research in selected areas of animal productivity (livestock vector-borne diseases, nutritional deficiencies and infertility) at the Livestock Centre located at Mount Makulu Research Station.

II. Priorities and strengths

Agricultural research priorities are determined in accordance with the general objectives of agricultural development of the Third National Development Plan (TNDP), 1979 - 83. The overriding aim of the TNDP is to achieve self-sufficiency in staple food production. To this end the national research program has substantial inputs into the generation of technology for food production: cereal and legumes crops and beef production.

The sunflower research program has developed varieties and hybrids that combine high oil content (about 38%) with high seed yield. This is a tangible area of strength in which Zambia could contribute to regional sunflower research and production.

Another area of strength is the innovation of establishing the Adaptive Research Planning Teams as part of the research program in order to discover the real problems and constraints to production at farmers' level in the traditional subsistence sector.

III. Publications

In addition to the annual reports published by the various research organizations, the NCSR publishes the Zambia Science Abstracts and the Zambia Journal of Science and Technology. Both publications include articles in agricultural research. There is a substantial lag in the publication of these journals.

The University of Zambia School of Agricultural Sciences is considering publishing a Zambia Agricultural Journal, if adequate funds and articles would be forthcoming. However, if a SADCC regional agricultural research journal is established, the Dean of the School felt that there would be no need for a separate Zambian journal.

IV. Interaction with other national agricultural research systems in SADCC region

Exsisting cooperation between Zambia and the other SADCC countries has included the following activities:

(a) Cooperation in soya bean research with Zimbabwe. Soya bean varieties developed in Zimbabwe, but late in maturity for the season there, adapt well to Zambian conditions, giving high yields. This is a particularly good example of the practical usefulness of germplasm exchange between countries.

(b) Zambia has sent its high yielding varieties and hybrids of sunflower, which are in demand in the region, to Tanzania, Malawi, Zimbabwe and Mozambique for testing and evaluation under local conditions.

(c) Zambia has sent sorghum and wheat seed for testing in Swaziland and Malawi.

(d) Zambia has received semen and Mashona cattle from Zimbabwe for research purposes.

V. Cooperation with research and research support organizations outside SADCC region

The IARCs (IITA, CIAT, ICRISAT, ILCA, ICARDA, AVRDC) have cooperative activities with the Zambian national research programs. Cooperative research activities are also undertaken with SAFGRAD and the Yugoslav Maize Research Institute. Many donor organisations support research in Zambia including CIDA, SIDA, USAID, FAO, UNDP, NORAD, ODA, World Bank, Ford Foundation, IFAD, Belgian Development Corporation Program, Dutch and French Aid organizations and the IAEA (use of isotopes in animal research).

VI. Views of research scientists and organizations on regional cooperation

A. Need for a Regional Centre

There was general agreement on the need for a centre to promote cooperation in agricultural research among the SADCC member countries. The view was expressed that most national programs are weak because they spread their meagre resources too thinly on many activities. If they can benefit from research elsewhere in the region, their resources can be concentrated on fewer projects. However, a minority concern was expressed that due to competition among national programs, the centre might not be effective in promoting cooperation.

B. Functions of the Centre

All the scientists and officials contacted were highly supportive of the proposed functions of the Centre as contained in the Team's terms of reference. In the discussions the following functions were emphasized:

Annex 3-h

1. The Centre should seek funds for regional research projects. The latter should preferably be located in countries where existing programs are weak.

2. Promotion of free germplasm exchange and cooperative evaluation of germplasm and breeding materials were rated high on the list of priorities for the Centre. Concern was expressed about the plant breeders' rights laws in Malawi and Zimbabwe which would restrict these activities. Perhaps the Centre could do something about this.

3. The development of young scientists needs special attention by the Centre. Suggestions to encourage this were (a) the provision of small research grants for research on problems of regional importance and (b) the award of travel grants for junior scientists within the region to learn from experienced and competent colleagues.

4. The Centre should coordinate all regional research projects and donor input into them. Specific examples of projects that need regional coordination are the proposed ECA Maize Research Centre for Eastern and Southern Africa to be located in one of the SADCC countries, and the IITA program of development, international testing and demonstration of high-yielding varieties of maize, rice, cowpea and soya beans.

5. The Centre should play a role in liaising with organizations involved with the production aspects of agriculture.

6. The Centre should assist national programs in monitoring and reviewing their research projects.

7. Assistance with experiment station development and operation, particularly the training of experiment station managers, would be most useful to Zambia.

8. Several problems of regional importance need concerted action by the SADCC countries and the Centre should take action on them. Examples given were: maize streak virus disease, tsetse fly control, mineral nutrition and deficiency in cattle.

9. Provision of facilities within countries in the region for storage of breeders' seed stocks so that they can be distributed and multiplied where needed. FAO is considering assistance in this area.

10. There are many institutions and organizations interested in research in the SADCC region. Too many visits are made with insufficient coordination. The Centre could rationalize such visits of outside organizations to the region.

C. Possible Zambian contribution to regional activities

Development of high yielding varieties and hybrids of sunflower with high oil content for local production of cooking oil (which most countries in the region now import) would be Zambia's immediate valuable contribution to regional research.

D. Other points from discussions with scientists and officials

1. The view was expressed that the CTC for Agricultural Research, at present composed of Directors of Agricultural Research of the nine SADCC countries, should be expanded to include Deans of Faculties of Agriculture and other heads of organizations conducting agricultural research in the region, e.g., Director of the Zimbabwe Tobacco Research Board, and Director of the Tea Research Foundation of Central Africa in Malawi. Such an expanded CTC should meet at least once a year.

2. The Economic Commission for Africa (ECA), under its Multinational Programming and Operations Centre in Lusaka, is making arrangements for the establishment of a Sub-regional Maize Research Centre for Eastern and Southern Africa. The proposal to establish the Centre precedes SADCC and was approved by the Council of Ministers of the sub-region, including SADCC countries, at the Sixth Meeting of the Council of Ministers at Mbabane, Swaziland 14-16 February 1983. A meeting of consultants and concerned countries will be held in Lusaka on 22-26 August, 1983 to determine the location of the Centre. The establishment of a maize research centre in the SADCC region is an activity in which the SADCC centre could play a major role.

VII. Organizations and persons contacted

Ministry of Agriculture and Water Development Headquarters

| | |
|---|---|
| W.M. Chibasa | Deputy Director of Agriculture (Research) |

Mount Markulu Research Station

| | |
|---|---|
| D.M. Naik | Chief Agricultural Research Officer |
| S. Kean | Adaptive Research Planning Team |
| B. Griffiths | Seeds |
| K.N. Rao | Maize Pathologist |

Annex 3-h

| | |
|---|---|
| A.J. Prior | Cereals Research Team |
| R. Raemaekers | Plant Pathologist |
| R.W. Magai | Soil Scientist |
| A.M. Bunyolo | Soil Scientist |
| H. Harrison | Animal Nutrition |
| S.T. Sanogho | Soil Microbiologist |
| P.J. Chimuka | Chief Agricultural Supervisor |
| B. Sakala | Animal Physiology Technologist |
| E. Lumande | Librarian |
| S. Boobola | National Council for Scientific Research |
| E. Malubita (Ms) | National Council for Scientific Research |

National Council for Scientific Research

| | |
|---|---|
| E.J. Zimba | Head of Research and Development Planning and Coordination Section |

University of Zambia School of Agricultural Sciences

| | |
|---|---|
| B.D. Owen | Dean of the School, and Animal Nutritionist |

USAID

| | |
|---|---|
| E.J. Gibson | Agricultural Development Officer |

Economic Commission for Africa (ECA)

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| S.A. Ochola | Acting Director, Eastern and Southern African Sub-regional Office |

UNDP

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|---|---|
| Judy S. Cheng-Hopkins | Assistant Resident Representative |

Annex 3-h

VIII. Documents consulted

W.M. Chibasa 1982. Agricultural Research efforts in Zambia. Paper presented at the inaugural meetings of the consultative technical meetings under SADCC Food Security Project One. Ministry of Agriculture and Water Development, Lusaka, Mimeo. 13pp.

Anon (undated). Present status of Agricultural Research in Zambia, Mimeo. 9pp.

# AGRICULTURAL RESEARCH IN ZIMBABWE

## I. The components

### A. Department of Research and Specialist Services

This Department, under the Ministry of Agriculture, is responsible for conducting research in agricultural science and crop and livestock production. It is also entrusted with provision of certain services to the agricultural industry and with regulatory services under various Acts. It maintains a close relationship with the Agricultural Research Council, a statutory body established by the Minister to review, to promote and coordinate agricultural research, excluding tobacco, sugar cane, pigs and forestry, which are not included in the responsibilities of the Department.

The Department, headed by a Director, embraces three research divisions, each under an Assistant Director, namely Research Services Division, Crop Research Division, and the Division of Livestock and Pastures.

#### 1. The Research Services Division

This Division is charged with the conduct and coordination of disciplinary research in the biological, physical and mathematical sciences applied to agriculture, and for providing services in support of the research programs of other branches of the Department, as well as for the agricultural industry as a whole. It consists of:

- Chemistry and Soil Research Institute (agricultural chemistry, crop nutrition, pedology, soil productivity, and fertilizer and farm feeds registration);
- Plant Protection Research Institute (entomology, nematology, pathology, pesticide registration, and phytosanitary services);
- Biometrics Bureau;
- Institute of Agricultural Engineering (appropriate technology, conservation engineering, crop mechanization, and testing and development);
- National Herbarium and Botanic Garden;
- Seed Services (seed laboratory and inspectorate, and plant breeders' rights);

- Information Services; and the

- Technical Development Unit.

2. The Crop Research Division

This Division is responsible for the coordination of the research policy and functions of the institutes, stations and research groups working on all field and horticultural crops, and for coordinating farming systems research for the communal area farmers. It consists of:

- Cotton Research Institute;

- Horticulture and Coffee Research Institute;

- Lowveld Research Station;

- Crop Breeding Institute;
(maize, oilseeds, potatoes, small grains, winter cereals); and the

- Agronomy Institute
(crop ecology, crop physiology, crop production, farming systems, weed research).

3. The Division of Livestock and Pastures

This division is responsible for all aspects of livestock production, including cultivated pastures and veld for grazing. In addition to its research function, the Division has a regulatory role in regard to the poultry and dairy industries, and also undertakes the grading of carcasses at the various abbattoirs throughout the country. It consists of:

- Matopos Research Station
(livestock breeding and production, and veld management);

- Grasslands Research Station
(livestock, veld management, legume inoculant factory);

- Henderson Research Station
(animal nutrition, dairy, pasture, physiology, poultry unit);

- Dairy Services;

- Meat Breeding Services;
- Veld and Pasture Research Institute; and
- Makoholi Experiment Station.

B. The Faculty of Agriculture, University of Zimbabwe

The Faculty of Agriculture consists of three departments: Crop Science, Animal Science, and Land Management.

The Crop Science Department is responsible for teaching and research on all crops including pasture research. The production, physiology, breeding, diseases and pests of all the major crops of importance in Zimbabwe are covered.

The Department of Animal Sciences is primarily concerned in propagating knowledge of the factors which affect the productivity of farm animals and the way in which animal products are prepared and processed for market. This function is achieved by teaching and research. Much of the research is done on research stations in collaboration with the Department of Research and Specialist Services of the Ministry of Agriculture. The benefits of the involvement of the Department of Animal Science with the Ministry of Agriculture and with the livestock industry have enabled the animal scientists at the University to make important contributions to the development of the livestock industry in Central and Southern Africa.

The Department of Land Management is unique in its composition comprising agricultural economists, soil scientists and an agricultural engineer whose teaching and research are all aimed at a sound holistic approach to land use, planning and development. The Department is involved in a range of issues including maintenance of soil fertility, conservation of soils and natural resources, land use and agricultural policy, and alternative forms of land use. The Department is collaborating with the Department of Research and Specialist Services, and with CIMMYT, in farming systems research.

C. Other Research

In Zimbabwe, farmers directly support a substantial amount of research. Research on tobacco is handled by the Tobacco Research Board, with about two-thirds of the funds provided by growers through a levy on sales, with the remainder provided by the Government. The Board contracts for some of Malawi's research needs in tobacco.

The Pig Industry Board, supported entirely by producers, has a farm and supports mainly management type research (e.g. nutrition, housing and management). An extensive genetic improvement program is undertaken involving litter testing, post performance and on-farm mulitiplication testing.

The Sugar Association Experiment Station was started in late 1966, independently of Government. The greater part of the research is on selection of suitable varieties for local production. Breeding work is undertaken by the Sugar Association in Natal, under contract, and promising varieties are tested at Chiredzi.

The Zimbabwe Seed Maize Association has a farm (Rattray Arnold Station) and is conducting a breeding program on maize and soya beans. More recently, the Agricultural Research Trust has been established, funded by the Grain and Oilseeds Commodity Associations. Its research work is based at a farm on the outskirts of Harare.

It has purchased a farm and has a modest research program. In general, commercial and industrial organizations in the country are increasing their research activities.

II. Priorities and strengths

In looking at the agricultural research system of Zimbabwe, the following stand out as areas of strength among the SADCC countries:

- legume microbiology
- sub tropical legumes
- animal nutrition
- crop breeding
- seed certification

III. Publications

The Information Services of the Department of Research and Specialist Services provides a management service for the Zimbabwe Journal of Agricultural Research, a botanical journal called KIRKIA and the Zimbabwe Agricultural Journal.

Since the team was asked by the CTC for Agricultural Research to look specifically at it, information in some detail was obtained relative to the Zimbabwe Journal of Agricultural Research. Earlier, this

journal was published by the Agricultural Research Council of Central Africa as the Rhodesia, Zambia and Malawi Journal of Agricultural Research, and thus, in the context of current international boundaries, was regional in nature. The present title, the Zimbabwe Journal of Agricultural Research, reflects the change in making it a journal of Zimbabwe.

The journal is published twice-yearly in Harare by the Department of Research and Special Services, Ministry of Agriculture. It is an internationally recognized journal by and for agricultural scientists, and all articles are refereed by an editorial board. It covers all disciplines in agricultural research, broadly interpreted to include forestry and fisheries.

Virtually all articles are written by Zimbabwe scientists, although recently some manuscripts have been submitted by scientists from other SADCC countries.

The Government handles printing, although in 1982 the work had to be handled by a commercial printer. Some problems are being encountered in getting the journal out on schedule.

A press run is in the order of 600 copies of which some 400 are routinely distributed to 59 countries, about equally among exchange, complimentary copies and subscriptions (1981-82). About 157 are sent to SADCC countries as follows:

| | |
|---|---|
| Exchanges | 4 |
| Complimentary | 114 |
| Subscription | 39 |

Zimbabwe accounts for more than 90% of the SADCC region distribution. Angola, Tanzania and Lesotho do not appear on the regular distribution list.

The cost of publication is about Z$9,000 - 10,000 per year, based on Vol. 19 (No. 2) and Vol. 20 (No. 1). The revenue for subscriptions for that period was about Z$1,200. Thus, the current net cost per year is around Z$9,000 for the journal which, for this period, ran 102 - 108 pages per number.

IV. Interaction of the national agricultural research system with other national systems in the SADCC region

Interaction of the Department of Research and Specialist Services with counterpart organizations in other SADCC countries is mostly on an informal basis - personal contacts. Of course, the CTC for Agricultural Research now provides a vehicle for periodic meetings of the Director with the other directors of research in the region.

The Faculty of Agriculture is developing a basis for a cooperative research and training project with the University of Zambia, with possible external funding from three donors. The project is referred to as the Sebongwe Development Project and is an area of resettlement resulting from construction of the Kariba Dam. A workshop has been proposed of Deans of Agriculture of the SADCC region.

As mentioned previously, the Tobacco Research Board interacts with the tobacco research program in Malawi.

V. Cooperation with research and research support organizations outside of the SADCC region

The Department of Research and Specialist Services cooperates with CIMMYT, CIAT, ILCA, IITA and ICRISAT. The following are included in organizations providing support to research of the Department: USAID, ACIAR, IDRC, ODA, USDA, the World Bank and IFAD.

The Faculty of Agriculture collaborates with CIMMYT in its East-Southern Africa-based farming systems research program, specifically in the conduct of training workshops. Its links with donor agencies include USAID, IDRC and the Ford Foundation.

VI. Views of the national agricultural system on regional cooperation

In general, persons interviewed supported the idea of need for greater cooperation in agricultural research in the region. However, a range of feeling was expressed about the need for a regional coordinating center. In the few cases where some skepticism was expressed, the reasons may have included a feeling that Zimbabwe would have relatively less to gain than most of the other countries. On the balance, though, a centre was viewed as a useful mechanism for promoting research, if it effectively carried out the kinds of activities described in the terms of reference for the study team.

Certainly the agricultural research system of Zimbabwe has much to offer to other countries of the region by means of a centre of cooperation. These include (a) experts in a number of fields who could serve as consultants, and resource persons for workshops; (b) improved genetic materials and production technology for crops such as maize and tobacco; (c) training opportunities such as in farming systems research at the Faculty of Agriculture; and (d) making the Zimbabwe Journal of Agricultural Research a corresponding SADCC journal.

Annex 3-i

VII. Organizations and persons contacted

A. Ministry of Agriculture

1. S. Muchena, Deputy Secretary

2. S.B.M. Marume, Under Secretary and Executive Secretary of the Food Security Administration Unit (SADCC)

3. P.T.W. Murphy, Chief Agricultural Economist

4. P.R.N. Chigaru, Director Agricultural Research and Specialist Services

5. Jerry Grant, Assistant Director Agricultural Research, Livestock and Pastures

6. Fenner, Assistant Director Agricultural Research, Crops

B. Tobacco Research Broad, Mutsaga Station

1. B.W. Blair, Entomolgist, and Editor of the Zimbabwe Journal of Agricultural Research

C. University of Zimbabwe

1. Malcolm J. Blackie, Dean, Faculty of Agriculture

D. USAID

1. Dale Pfeiffer, Regional Rural Development Officer

2. Carl Eicher, Consultant

E. Agricultural Research Council

1. Keith Kirkman, Chairman

VIII. Documents consulted

1. Keith Kirkman. The value of agricultural research in terms of animal production. Copy of speech given earlier in 1983 to the Zimbabwe Society for Animal Production.

125

2. The Zimbabwe Journal of Agricultural Research 19 (1981) Directions to Contributors.

3. The Department of Research and Specialist Sciences. Published by Information Services, Department of Research and Specialist Services, Ministry of Agriculture, P.O. Box 8108, Causeway, Zimbabwe 1983.

4. University of Zimbabwe, Faculty of Agriculture

   a. Guide - Department of Animal Science

   b. Crop Science Department (No. 134)

   c. Department of Land Management Guide

Annex 4

DOCUMENTS CONSULTED - GENERAL


1. Declaration on Development Co-operation, Southern African Heads of State Summit Conference, Lusaka, April 1980.

2. SADCC 2 - Maputo. The Proceedings of the Second Southern African Development Co-ordination Conference, held in Maputo, People's Republic of Mozambique on 27/28 November 1980. Edited by Aloysius Kgarebe. SADCC Liaison Committee July 181.

3. Southern African Development Coordination: From Independence and Poverty towards Economic Liberation. SADCC, Blantyre, Malawi, 20 November 1981 (Volume One - Record of the Council of Ministers, and Appendix B - Memorandum of Understanding on the Institutions of the Southern African Development Co-ordination Conference).

4. Southern African Development Co-ordination Conference. Record of the Council of Ministers held in Luanda, People's Republic of Angola on 25th and 26th June 1982. Volume Two (Annex P. Position Descriptions, Appointment Conditions, Terms and Conditions of Employment; and Annex R - Notes on the Estimated Cost of the Permanent Secretariat in Gaborone, Botswana).

5. Project Proposals for Achieving Regional Food Security by the SADCC Group of Countries. Harare, November 1982.

6. Report and Recommendations on SADCC Regional Food Security Project Nos. 6 and 7 by: The Technical Advisory Mission from the International Development Research Centre. Ottawa, Canada, January 1982.

7. Preparation of Project Proposals for the Establishment of an Early Warning System for Regional Food Security (SADCC countries) A Mission Report prepared for the participating governments by the Food and Agriculture Organization of the United Nations. Rome, November 1982 (AG: TCP/RAF/2202).

8. VIII Records on the Meeting of the C.T.C. on Agricultural Research, 23-24 November 1982.

9. SADCC - Record of the Council of Ministers. Held in Maseru, Kingdom of Lesotho on the 26th January 1983.

10. SADCC Administrative Unit: Purpose, Organization, Role and Functions. Zimbabwe Ministry of Agriculture. March 1983.

11. SADCC Agricultural Research Initiative. Submitted by Government of Botswana, January 1983.

Annex 4

12. Agricultural Research Initiative, Progress Report. Submitted by Government of Botswana to the Council of Ministers Meeting in Dar es Salaam, May 1983.

13. SADCC CTC for Research/CDA Joint Committee for Assessment of Agricultural Research. Minutes from meeting in Harare June 1st to 3rd, 1983.

14. Record of the Second Meeting of SADCC Consultative Technical Committee (CTC) for Research (Draft). Held in Harare from 19th to 21st of April, 1983.

15. A study of the Recruitment and Retention of Professional and Technical Staff in Ministries of Agriculture in the SADCC Region (Draft) April 11, 1983.

16. SADCC Regional Food Programme. Records of the Second Round of Meetings of the SADCC Consultative Technical Committees on Agricultural Extension and Training, Agricultural Research and Agricultural Economics and Marketing 19th - 21st April 1983.

17. United Nations Economic Commission for Africa. Multinational Programming and Operational Centre (ECA/MULPOC) for Eastern and Southern African States. Sixth Meeting of the Lusaka - based MULPOC Council for Ministers. Mbabane, Kingdom of Swaziland. 14-16 February 1983.

18. Douglas Daniels and Barry Nestel, Editors. Resource Allocation to Agricultural Research. Proceedings of a Workshop held in Singapore 8-10 June 1981 IDRC-182e.

Annex 5

Extract from :

Southern African Development Coordination Conference. Held in Blantyre, Republic of Malawi, on the 18th November 1981. Volume Two, Annex P

## CHAPTER VI

## TERMS AND CONDITIONS OF EMPLOYMENT

1. General

(a) The terms and conditions of service for the staff of the Secretariat will be as outlined hereafter. These will be embodied in an agreement, according to the legal interpretation prevalent in the Member Countries for a contractual relationship of employment, between the SADCC and the staff of the Secretariat, stating the rights and obligations of each party in relation to employment with the Secretariat.

(b) These terms and conditions of employment shall be contained in the initial letter of offer of employment. Acceptance of the offer shall, therefore, constitute acceptance of these terms and conditions.

(c) A sub-committee of the Standing Committee of Officials shall act as regulatory body for the purpose of the administration and proper application of these terms and conditions of service. (The term SADCC used herein may also refer to this Committee). It may, therefore, make regulations in conformity with, but not in contradiction with, the substantive elements contained in any contractual agreement between the parties.

(d) If appointment is made by means of a secondment, the terms and conditions of employment applicable principally to period of employment, leave, salaries, pensions, insurance and benefits in existence at the time of appointment shall continue to take effect as if the appointee had not left his previous position. Because a person may be called upon to work in a different location, the values and premiums of such benefits and advantages may have to be adjusted accordingly. Nonetheless, SADCC reserves the right to vary, or otherwise compensate such salaries, benefits and advantages as it may judge appropriate to do so, after consultation with the prospective employee and his employer.

(e) If during the period of service with the SADCC Secretariat a person, other than a person performing duties of a casual nature or working under a contract, ceases to be in the service of the

Secretariat either for lack of work, discontinuance of a function or unsatisfactory performance, that person shall resume his previous position with the seconding government, agency or international organization or otherwise be appointed to another position by the seconding organization.

(f) "Dependent" means one wife, unmarried children under age 21 and children over age 21 who are undergoing full time education in a recognized institution, who are legally dependent upon a Secretariat employee for continuing support.

2. Leave

(a) Leave shall be described as a period during which any person in service to the Secretariat is on authorized leave of absence from duty.

(b) Annual vacation leave shall be granted and calculated in respect of each fiscal year for every person seconded to the Secretariat, in the manner, rate and amount in existence immediately preceding appointment to the Secretariat. No person shall suffer any penalty, such as loss of accumulated leave credits, for joining the Secretariat. If leave must be taken, it would be advisable that it be taken prior to appointment.

(c) Annual vacation leave, in respect of those employed contractually, shall be specified in the contract and shall be calculated at the rate of thirty (30) working days for Executive Secretary and the Deputy Executive Secretary and 25 working days for the Administrative Officer and Executive Officer for every twelve months service and shall be at the rate applicable in the host country for supporting staff. Leave days not used during the year shall be allowed to accumulate at any one time more than two (2) years annual leave credits.

(d) No contractual employee shall be granted vacation leave unless he has been in service for at least six months.

(e) Sick leave with pay, in respect of every person seconded to the Secretariat, shall be granted and calculated in the manner, rate and amount in existence immediately preceding appointment to the Secretariat. No person shall suffer loss of accumulated credits for joining the Secretariat.

(f) Sick leave with full pay, in respect of contractual employees, shall be granted up to a maximum of thirty days and to a further thirty days with half pay, and thereafter leave without pay for a

period of ninety days in each period of twelve months continuous service, provided that the employee produces a certificate signed by a registered medical practitioner and provided that the incapacity is not due to gross negligence on the part of the employee.

(g) Compassionate leave may be granted at the discretion of the Chairman of the Council of Ministers in respect of the Executive Secretary.

(h) Compassionate leave may be granted at the discretion of the Executive Secretary or his Deputy in respect of all other Secretariat officers and staff.

(i) Compensatory leave with pay in lieu of premium pay for overtime worked may be granted at the discretion of the Executive Secretary or his Deputy.

(j) Maternity leave shall be granted in the manner prescribed in the employment legislation in force in the country where the Secretariat is located.

(k) The authority to grant leave may be further delegated to the Administrative and Executive Officers at the discretion of the Executive Secretary.

(l) In all cases, leave requests and acceptance shall be recorded in writing. In the case of seconded persons, the SADCC and subsequently the Executive Secretary shall come to an agreement with the seconding organisation as to who shall hold responsibility for the location and administration of leave records.

3. Pay

(a) Pay for all Secretariat staff shall be in accordance with the scales of pay prescribed on page 3 of this Report (Chapter III - not included in this document).

(b) A person who is asked by the Executive Secretary or his Deputy to perform substantially all of the duties of a higher position is eligible to receive acting pay if he meets the qualifying period of at least one month. Such acting allowance shall amount to the difference between the substantive salary and the lowest notch of the basic salary of the higher grade.

4. Travel on Duty

(a) There shall be prepaid to all Secretariat Staff on authorised duty away from the duty station, all travel, meal and accommodation expenses calculated according to the prevalent UN rates. This shall also apply to travel with the duty station.

(b) The Executive Secretary or his Deputy may reimburse any incidental expenses which are considered necessary and reasonable under the circumstances.

(c) Travel to and from airports, bus or train terminals shall be by direct route and shall be reimbursed upon completion of a travel claim.

(d) All air travel shall be by economy class except for the Executive Secretary who shall travel by first class.

(e) When an employee uses a private vehicle, he shall be compensated at a rate prescribed from time to time by the Chairman of the Council of Ministers.

(f) Upon completion of travel, the employees shall fill out a travel form, detailing all costs and in certain cases, the reasons for incurring special costs. There shall be kept in the Secretariat office all records of travel expenditures.

5. Travel for Other Purposes

(a) Employees shall be reimbursed the cost of commercial transport when they are required to return to work after normal working hours.

(b) The Secretariat shall pay the cost of return travelling expenses of employees and dependents in case of termination of employment by reason of retirement, release or lay-off.

(c) SADCC shall provide travel expenses to employees for home leave once during the term of a contract.

6. Relocation

(a) When a person employed by the Secretariat is relocated to or from the duty station or ceases to be an employee of the Secretariat, expenses for relocation will be paid, in respect of the employee and any accompanying dependent.

(b) The personal and household effects of an employee, up to a maximum of 3,000 kg per employee with dependents and 1,000 kg without dependents which are authorised for shipment will be transported to the new place of duty at SADCC expense via the most practical and economical mode and route.

(c) SADCC will select the mode of transportation and pay travel and accommodation expenses for the employee and his dependents.

(d) SADCC may reimburse any other expenses incurred while an employee is in the process of relocating but no reimbursement shall be made for items lost while in the personal possession of the employee or his dependents.

(e) SADCC shall authorise payment of a non-accountable allowance of US$100 to an employee and an additional US$25 for each of his dependents.

7. Housing

(a) SADCC shall provide rent-free fully-furnished housing to the Executive Secretary and rent-free housing with hard furnishing to other Secretariat Senior Officers. This rental allowance shall be at SADCC's expense.

(b) SADCC shall meet accommodation expenses up to a maximum of 14 days for senior officers on first appointment, where housing is not immediately available.

8. Pension and Insurance Plans

(a) Contributions to existing pension and medical and life insurance plans for seconded officers and staff should not be affected by the temporary assignment to the new work location. In such cases, and unless otherwise agreed with the previous employer, SADCC agrees to contribute to these plans in a manner and amount equal to that which was the responsibility of the previous employer.

(b) When existing plans cannot be maintained, SADCC shall endeavour to locate compatible plans in the new locality to which both employee and SADCC can contribute in the same proportions as to any previous plan.

(c) SADCC may agree to make payments in respect of any items not covered by these plans. These may include the costs of insurance for dependents, ambulance, private room in hospital, dentist fees, special health care and examination.

(d) A gratuity may be given to any employee who makes his own Pension and Insurance Plan arrangements.

9. Foreign Service Allowance

(a) A foreign service allowance shall be provided upon appointment to the Senior Officers of the Secretariat and shall be in an amount equal to 10% of an employee's gross annual salary, calculated and delivered in equal monthly payments.

(b) The allowance is provided as an incentive to foreign officers and shall not be added on to gross salary in the calculation of employee assessments and pensionable benefits. This allowance shall not be payable during periods of leave outside the duty station exceeding 14 days.

10. Assessment

(a) There may be calculated in lieu of income tax an assessment at the rates and under the conditions specified below to be applied to an employee's gross annual salary, excluding foreign service allowance.

(b) This assessment shall apply to positions which are the object of foreign recruitment and shall not apply to staff locally engaged from the country in which the Secretariat is situated.

(c) The assessment shall be calculated at the following rates for staff whose salary rates are set forth for the senior officer positions:

| Assessable Payments (US dollars) | Assessment | |
|---|---|---|
| | Staff with dependents | Staff without dependents |
| First $10,000 pay per year | 10% | 12% |
| Remaining assessable payments | 25% | 34% |

(d) The assessment shall be collected by the SADCC by witholding it from payments. No part of the assessment so collected shall be refunded because of cessation of employment during the year.

(e) SADCC shall pass a resolution concerning the disposal of revenue derived from assessments.

11. Education and Care of Dependant Children

(a) SADCC may provide senior officers of the Secretariat with financial assistance to ensure that their dependant children obtain an education approximating as much as possible the standards and costs of education in their country of origin.

(b) When children must attend a school in a country within the region other than the country in which the Secretariat is to be located, including the country of origin, SADCC may approve travel and accommodation expenses once a year in the amount and manner it considers appropriate in order to re-unite children with their parents.

(c) The amount of assistance provided in paragraph 11 (a) shall be equal to the amount which is in excess of the current costs of tuition in the country of origin and which the employee must pay to retain similar standards of education.

12. Medical and Related Expenses

(a) Employees of SADCC and their dependants who are required by SADCC to undergo any medical examination, laboratory test or immunisation shall do so at SADCC expense and the results of such examinations shall be forwarded to SADCC.

(b) SADCC may require at any time during the period of assignment with the Secretariat that an employee undergo periodic medical examinations of the kind described in this chapter and at SADCC expense.

(c) An offer of employment with the Secretariat shall be conditional upon the results of a medical examination of the candidate.

(d) When an employee of the Secretariat dies outside his/her country of origin, SADCC shall pay the expenses of returning his/her body to his/her home for burial.

13. Information

(a) SADCC shall supply each Secretariat employee with a copy of these terms and conditions of employment at the time an offer of employment is made.

14. Outside Employment

(a) SADCC employees are prohibited from engaging in any other employment.

15. Hours of Work

(a) The normal working week shall be forty (40) hours from Monday to Friday inclusive, not including lunch periods, but may vary subject to the exegencies of service.

(b) When children must attend a school in a country within the region other than the country in which the Secretariat is to be located, including the country of origin, SADCC may approve travel and accommodation expenses once a year in the amount and manner it considers appropriate in order to re-unite children with their parents.

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Annex 5

16. Overtime

(a) No overtime pay shall be granted to Secretariat senior officers.

(b) Conditions governing overtime payment for supporting staff shall be determined by local legislation.

(c) Subject to the exigencies of service, the employer shall make every reasonable effort to avoid excessive overtime and to allocate overtime work on an equitable basis among readily available qualified personnel.

17. General Rules Applicable for Leave

(a) The conditions contained in Section 2 of this Chapter shall apply in respect of employees for whom leave has been specified therein.

(b) An employee shall be informed on request of the balance of his vacation and sick leave credits.

(c) An employee shall advise the employer of his vacation request at the beginning of the fiscal year. The employer shall give reasonable warning that he intends to cancel a request for vacation leave and can do so only because of the necessities of service. The employer shall also reimburse the costs incurred through contracts and reservations if these amounts are not returnable to the employee.

(d) When, during any period of vacation leave with pay, an employee is recalled to duty because of the necessities of service, he shall be reimbursed for reasonable expenses for proceeding to his place of duty and for returning to the place where he was having his vacation upon completion of the assignment. The employee shall not be considered as being on vacation leave with pay during the recall period.

(e) If a person ceases to be employed by the Secretariat and that person has worked six (6) full months, the employer shall grant to the employee an amount in cash equal to the value of unused vacation leave credits.

(f) In any case, all types of leave shall be governed according to the discretionary authority of the employer.

18. Paid Holidays

(a) The designated paid holidays shall be those in force in the country where the Secretariat is located and shall be on such days as is the custom of the land.

(b) When a public holiday falls within a period of paid leave for an employee, that day shall not be deemed as a day of leave.

19. Severance Pay

(a) When an employee who is hired on a contractual basis is subject to a lay-off because of the discontinuation of a function, he shall receive severance benefits calculated on the basis of his weekly rate of pay, i.e. two (2) week's pay for the first complete six (6) months of continuous service, or three (3) weeks' pay for the first complete years of service and an additional one(1) week's pay for each subsequent year of service.

(b) If an employee's services are terminated after he has completed six (6) months continuous service because of his incapacity for medical reasons to carry out his/her duties, he shall, unless the incapacity is due to gross negligence on the part of the employee, receive severance benefits at the rate of two (2) weeks' pay for the first complete six (6) months of continuous service or three (3) weeks' pay for the first complete year of service plus an additional one (1) week's pay for each subsequent year of service.

(c) If a junior staff employee dies after he has completed six (6) months continuous service, there shall be paid into his estate six (6) week's severance pay and an additional two (2) weeks' pay for each subsequent year of service.

(d) No severance pay shall be given to a contractual employee who terminates his employment with the Secretariat due to resignation or release.

20. Pay

(a) An employee is entitled to be paid at the rate or scale specified in Chapter III (not included in this document) for the position described therein.

(b) There shall be calculated a salary increment for each year of employment with the Secretariat. An employee shall receive the salary at the first step upon appointment and proceed to the next successive step every year thereafter.

(c) The employer shall periodically review the salary scales of all positions.

(d) Based on the performance of an employee, the employer may provide no increment if performance is judged unsatisfactory at the end of the year.

(e) The pay increment date shall be the date of initial appointment with the Secretariat for contractual employees and in the case of seconded employees, on a date which shall be mutually agreeable to the employer, the seconded employee and his seconding organization.

(f) The yearly pay rate shall be divided into a weekly rate and further into an hourly rate for overtime purposes. The employee shall be paid every month.

21. Discipline

(a) An employee is expected to perform the duties assigned to him and to follow his supervisor's instructions in the normal conduct of Secretariat functions.

(b) When an employee's conduct is judged to be insubordinate or otherwise out of line, he shall firstly be orally reprimanded. If the offence persists, he shall receive a written reprimand, which shall be put on the employee's personal file. If the offence persists further, he shall be suspended at half pay for a period of two months. If the offence persists he may then be discharged from duty without severance pay.

22. Employee Records

(a) The employer shall keep individual employee records containing rates of pay and increments, all advances and allowances, employment and disciplinary measures.

(b) There shall also be kept on record all documents which shall be prepared in respect of any of the provisions contained in these terms and conditions of employment.

23. Tax Exemptions

(a) All payments and salaries made to the senior officers of the Secretariat shall be made tax-free, subject to the laws of or other agreements with the host country. An assessment shall be levied against an employee's gross annual salary in lieu of income tax.

24. Receipts

(a) All claims made by staff of the Secretariat shall be supported by receipts and vouchers as required.

Annex 5

25. Official Car

(a) The Executive Secretary shall be provided with a car for use on official duties.

26. Employment Legislation

(a) These terms and conditions of employment are not meant to contradict any of the substantive provisions of any employment legislation in force in the country where the Secretariat is located.

(b) Any agreement made which is contrary to such legislation shall be null and void and the provision of the legislation shall apply instead.

(c) Any agreement made which is in excess or above any of the minimum requirements of such legislation shall be valid and considered not in contradiction to the legislation.

November 1981"

# BUDGET DETAILS

## A. CAPITAL EXPENSES

### 1. Buildings[1/]

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| (a) Office Block | 75.0 | 50.0 | - | - | - | 125.0 |
| (b) Staff Houses | 115.0 | 47.0 | - | - | - | 162.0 |
| (c) Site Works and Services | 65.5 | - | - | - | - | 65.5 |
| (d) Professional fees | 23.0 | - | - | - | - | 23.0 |
| Contingencies (10%) | 27.8 | 9.7 | - | - | - | 37.5 |
| Total Buildings | 306.3 | 106.7 | - | - | - | 413.0 |

### 2. Rental of Staff Housing

During the first year, and extending for three months into the second year, before construction is ready, hiring of houses has been budgeted for at 1983 prices: $1,000 per month per house (senior - type II) and $500 per month per house (medium - type M2).

Considering tendering period and construction, an allowance has been made for hiring of 3 senior staff houses and one medium house for one year:

| | |
|---|---|
| Senior (3) | 36.00 |
| Medium (1) | 6.00 |
| Total Rental of Staff housing | 42.00 |

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1/ Estimates were obtained from the Architectural and Buildings Department, Ministry of Works and Communications, in Gaborone, and are included in this annex. The estimate given for the office block ($75,000) was increased by the Team to $125,000, taking into account the cost of the recently-completed Arable Crops building at Sebele. Further, the estimates for housing were modified by reducing Type II houses from four to three and Type M2 from two to one unit. The type LCH (P) houses were eliminated.

3. Furnishings- Staff Houses (costs to be incurred in second year)

| | Cost x no. pieces | Total |
|---|---|---|
| Dining Set (4 pieces) | 1.3 x 4 | 5.2 |
| Sofa Set (4 pieces) | 2.0 x 4 | 8.0 |
| Bedroom Set (4 pieces) | 1.6 x 4 | 6.4 |
| Masterbed | 0.4 x 4 | 1.6 |
| Ordinary bed | 0.2 x 8 | 1.6 |
| Electric kitchen stove | 0.5 x 4 | 2.0 |
| Fridge/Freezer | 1.1 x 4 | 4.4 |
| Air Conditioner Unit | 0.5 x 12 | 6.0 |
| Writing Table | 0.2 x 4 | 0.8 |
| Chairs | 0.1 x 10 | 1.0 |
| Lamps and miscellaneous furnishings | 1.0 x 4 | 4.0 |
| Carpeting | 1.7 x 4 | 6.8 |
| Draperies | 1.0 x 4 | 4.0 |
| Total Furnishings - Staff Houses | | 51.8 |

4. Furnishings - Office building (costs to be incurred in second year)

(a) Staff Offices

| | |
|---|---|
| Executive desk (6 drawers) @ $600 x 4 | 2,400 |
| Executive chair @ $340 x 4 | 1,360 |
| Ordinary table @ $120 x 8 | 960 |
| Ordinary office chairs @ $70 x 20 | 1,400 |
| Typing desk @ $140 x 3 | 420 |
| Typing chair @ $50 x 3 | 150 |
| Filing cabinet @ $150 x 10 | 1,500 |

4. Furnishings - Office building (cont'd)

| | |
|---|---|
| Air conditioner units @ $500 x 8 | 4,000 |
| Curtains, small refrigerator, etc. | 2,000 |
| Subtotal | 14,190 |
| (b) Conference room | |
| One oval desk @ $1,000 | 1,000 |
| 12 Conference chairs @ $200 | 2,400 |
| Air conditioner | 500 |
| Subtotal | 3,900 |
| Total Furnishings - Office Building | 18,090 |

5. Equipment

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| (a) Vehicles | | | | | | |
| 1st Mini-bus | 16.0 | - | - | - | - | 16.0 |
| 2nd Mini-bus | - | - | 22.0 | - | - | 22.0 |
| (b) Desk computer | 5.0 | - | - | - | - | 5.0 |
| (c) Telex Terminal | | | | | | |
| Deposit and Connections | 1.4 | - | - | - | - | 1.4 |
| (d) Overhead Projectors Cameras, etc. | 3.5 | - | - | - | - | 3.5 |
| (e) Typewriters (3) @ $1,500 | 4.5 | - | - | - | - | 4.5 |
| (f) Photocopier | 8.5 | - | - | - | - | 8.5 |
| (g) Miscellaneous Office Equipment | 3.0 | - | - | - | - | 3.0 |
| Total Equipment | 41.9 | - | 22.0 | - | - | 63.9 |

B. GENERAL OPERATING EXPENSES

| | Year 1[2] | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 1. Salaries & Benefits[1] | | | | | | |
| a. Senior Staff | | | | | | |
| Director ($25.0)[3] | 20.6 | 30.3 | 33.3 | 36.6 | 40.3 | 161.1 |
| Manpower ($21.0) | 17.4 | 25.5 | 28.1 | 30.9 | 34.0 | 135.9 |
| Information ($18.0) | 14.9 | 21.9 | 24.1 | 26.5 | 29.2 | 116.6 |
| Pension Plan (10% of salary) | 5.3 | 7.8 | 8.6 | 9.4 | 10.4 | 41.5 |
| Removal & Relocation[4] | 12.0 | - | - | - | 17.6 | 29.6 |
| Medical Insurance ($600/family/year) | 1.8 | 2.0 | 2.2 | 2.4 | 2.6 | 11.0 |
| Insurance (disability, accident, etc) | 5.0 | 5.5 | 6.1 | 6.6 | 7.3 | 30.5 |
| Education (2 school age children/family @ $2,000/child/year) | 12.0 | 13.2 | 14.5 | 16.0 | 17.6 | 73.3 |
| Leave travel (family of 5, once per 2 years) | - | 7.5 | - | 9.1 | - | 16.6 |
| Subtotal Senior Staff | 89.0 | 113.7 | 116.9 | 137.5 | 159.0 | 616.1 |
| b. Support Staff | | | | | | |
| Admin/Accounts ($16.0) | 12.0 | 17.6 | 19.4 | 21.3 | 23.4 | 93.7 |
| Secretaries (2 @ $7.5) (one bilingual) | 11.3 | 16.5 | 18.1 | 20.0 | 22.0 | 87.9 |
| Copy typist ($5.5) | 4.1 | 6.1 | 6.7 | 7.3 | 8.1 | 32.3 |
| Driver/Mechanic ($4.0) | 3.0 | 4.4 | 4.8 | 5.3 | 5.9 | 23.4 |

Annex 6

| | Year | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| b. Support Staff (cont'd) | | | | | | |
| Second Driver | - | - | 4.8 | 5.3 | 5.9 | 16.0 |
| Messenger/Cleaner ($2.5) | 1.9 | 2.8 | 3.0 | 3.3 | 3.7 | 14.7 |
| Pension (10% salary) | 3.2 | 4.7 | 5.7 | 6.3 | 6.9 | 26.8 |
| Medical Insurance ($400/family/year) | 2.4 | 2.6 | 3.4 | 3.8 | 4.2 | 16.4 |
| Insurance | 4.0 | 4.4 | 4.8 | 5.3 | 5.9 | 24.4 |
| Subtotal Support Staff | 41.9 | 59.1 | 70.7 | 77.9 | 86.0 | 335.6 |
| TOTAL | 130.9 | 172.8 | 187.6 | 215.4 | 245.0 | 951.7 |

1/ In estimating this part of the budget, it is assumed that senior staff will be recruited from within the region. In order to attract staff from all of the SADCC countries, the salaries from the country with the highest salaries (currently Zimbabwe) have been used in estimating salaries for senior staff of the Centre. And, in line with the SADCC Secretariat, a foreign service allowance of 10% has been added to the base salary. The Director of SACCAR is considered to be at the level of the Director of Research or Dean of Agriculture/Veterinary Science and the Manpower Training Officer and the Information/Publication Officer at the level of Chief Research Officer or Senior Lecturer. At the time of writing this report, the Team was informed that the Zimbabwe salaries might go up by 15%. If this happens, the Team recommends that the base salaries listed above be adjusted accordingly. Salaries and benefits have been adjusted over the 5-year period to reflect a 10% inflation factor.

2/ It is assumed that, in the first year, the staff will be in post for 3/4 of the year and the salaries have been calculated accordingly.

3/ Base salaries not including the 10% foreign service allowance are shown in parentheses. Salary figures in the table include the 10% added the first year to the base salary.

4/ Removal and Relocation means cost of moving staff and family to Gaborone at the beginning of contract and taking them back at the end.

Annex 6

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 2. Travel Centre Staff (includes 10% inflation) | | | | | | |
| a. Within SADCC for 3 Senior | | | | | | |
| i. Airfares | | | | | | |
| One trip per staff per country 1st year, then 2 trips per staff per year per country (cost/trip to 8 countries @ $3,000) | 9.0 | 19.8 | 21.8 | 24.0 | 26.4 | 101.0 |
| ii. Per diem | | | | | | |
| $100 for total of 45 days per staff member in 1st year and 75 days per staff member per year subsequently | 13.5 | 24.8 | 27.2 | 29.9 | 32.9 | 128.3 |
| b. Travel Outside SADCC[1/] | | | | | | |
| i. Airfares for total of 1 trip first year and 3 trips in subsequent years (unit trip costs $3,000) | 3.0 | 9.9 | 10.9 | 12.0 | 13.2 | 49.0 |
| ii. Per diem | | | | | | |
| $100 for 7 days per trip | 0.7 | 2.3 | 2.5 | 2.8 | 3.1 | 11.4 |
| c. Local travel[2/] | 1.0 | 1.2 | 1.3 | 1.4 | 1.5 | 6.4 |
| Total Travel | 27.2 | 58.0 | 63.7 | 70.1 | 77.1 | 296.1 |

1/ Senior staff will need to attend international meetings on agricultural research.

2/ Local travel involves official duty using personal cars.

Annex 6

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 3. Operation and Servicing of Equipment and Vehicles (10% inflation) | | | | | | |
| a. Telex terminal[1/] | 9.4 | 13.8 | 15.2 | 16.7 | 18.4 | 73.5 |
| b. Vehicles[2/] | | | | | | |
| Fuel, spares and maintenance | 3.4 | 5.0 | 10.9[3/] | 12.0 | 13.2 | 44.5 |
| c. Servicing | | | | | | |
| Typewriters | 0.5 | 0.6 | 0.6 | 0.7 | 0.8 | 3.2 |
| Photocopier | 0.5 | 0.6 | 0.6 | 0.7 | 0.8 | 3.2 |
| Total Operation and Servicing of Equipment and Vehicles | 13.8 | 20.0 | 27.3 | 30.1 | 33.2 | 124.4 |
| 4. Other costs | | | | | | |
| a. Stationery | 7.5 | 10.0 | 12.0 | 12.0 | 13.0 | 54.5 |
| b. Telephones and Postage | 7.5 | 10.0 | 12.0 | 12.0 | 13.0 | 54.5 |
| c. Electricity and Water | 5.0 | 12.0 | 13.0 | 13.0 | 14.0 | 57.0 |
| Total Other Costs | 20.0 | 32.0 | 37.0 | 37.0 | 40.0 | 166.0 |

1/ Assumed unit cost of telex is $5.00 with average of 2500 messages/year. Operating 9 months in first year.

2/ Based on 22,500 km/year/vehicle @ .20/km (9 months in first year).

3/ Second vehicle added.

Annex 6

C. PROGRAM EXPENSES (10% inflation)

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 1. CTC Meetings | | | | | | |
| One in 1st year and two per year subsequently. One person per country 1st meeting in year and three people per country 2nd meeting in year | | | | | | |
| i. Airfares ($500/ person/meeting) 8 countries | 4.0 | 17.6 | 19.4 | 21.3 | 23.4 | 85.7 |
| ii. Per diem @ $100/day for 5 days/person/meeting 9 countries | 4.5 | 19.8 | 21.8 | 24.0 | 26.4 | 96.5 |
| Total Meetings | 8.5 | 37.4 | 41.2 | 45.3 | 49.8 | 182.2 |
| 2. Publications[1/] | | | | | | |
| a. Newsletter - 2 issues in 1st year then 4 issues per year | 2.9 | 6.6 | 7.3 | 8.2 | 9.3 | 34.3 |
| b. Journal - 2 issues in second year then 3 per year | - | 20.9 | 35.6 | 42.7 | 48.5 | 147.7 |
| c. Others - Workshop proceedings, consultant reports[2/] | 6.0 | 9.9 | 12.7 | 15.9 | 17.5 | 62.0 |
| Total Publications | 8.9 | 37.4 | 55.6 | 66.8 | 75.3 | 244.0 |

1/ See attachment on Cost of Publications.

2/ Other publications; for in first year; six in second; seven in third; and eight per year in subsequent year.

Annex 6

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 3. Seminars/Conferences/ Workshops | | | | | | |
| a. Participants - One workshop in 1st year, three in 2nd year, and 4 per year subsequently | | | | | | |
| i. Airfares: 3 part. per country per workshop for 8 countries @ $500 per person | 12.0 | 39.6 | 58.1 | 63.8 | 70.3 | 243.8 |
| ii. Per diem @ $100 for 5 days per workshop per participant (27 partic/workshop) | 13.5 | 44.6 | 65.3 | 71.8 | 78.8 | 274.0 |
| Subtotal | 25.5 | 84.2 | 123.4 | 135.6 | 149.1 | 517.8 |
| b. Resource Person - Three per seminar | | | | | | |
| i. Airfares ($1,000/ per person) | 3.0 | 9.9 | 14.5 | 16.0 | 17.6 | 61.0 |
| ii. Per diem @ $100 plus honorarium $150 for 7 days | 5.3 | 17.3 | 25.4 | 28.0 | 30.7 | 106.7 |
| Subtotal | 8.3 | 27.2 | 39.9 | 44.0 | 48.3 | 167.7 |
| c. Translation & misc. expenses (10%) | 3.4 | 11.1 | 16.3 | 18.0 | 19.7 | 68.5 |
| Total Seminars/ Conferences/Workshops | 37.2 | 122.5 | 179.6 | 197.6 | 217.1 | 754.0 |
| 4. Special Studies | | | | | | |
| Consultants on special subjects needing urgent attention. Two 1st and 2nd year, three 3rd year and then four per year, each lasting 4 weeks | | | | | | |
| i. Airfares - international ($2,500/person) | 5.0 | 5.5 | 9.1 | 13.3 | 14.6 | 47.5 |

Annex 6

| | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| 4. Special Studies (cont'd) | | | | | | |
| ii. Air fares - regional ($2,500/person) | 5.0 | 5.5 | 9.1 | 13.3 | 14.6 | 47.5 |
| iii. Per diem and honararium @ $100 per day and $150 per day, respectively (28 days/person) | 14.0 | 15.4 | 25.4 | 37.3 | 41.0 | 133.1 |
| Total Special Studies | 24.0 | 26.4 | 43.6 | 63.9 | 70.2 | 228.1 |
| 5. Research Grants | | | | | | |
| Research support @ $10,000/grant. (Two per country 2nd year, then three per country/ year) Not adjusted for inflation | - | 180.0 | 270.0 | 270.0 | 270.0 | 990.0 |
| 6. Travel Grants (Regional) | | | | | | |
| $3,000 per grant. (One per country 1st year; two per country 2nd year; three per country 3rd year then 4 per country per year). | 27.0 | 59.4 | 98.0 | 143.6 | 158.0 | 486.0 |

Annex 6

DATA USED FOR ESTIMATING PUBLICATION COSTS (IN US $)

| Item | Year 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| Research Journal | | | | | | |
| Editing | - | 1,475 | 2,400 | 2,700 | 2,900 | 9,475 |
| Translation of Abstracts | - | 235 | 400 | 470 | 540 | 1,645 |
| Printing | - | 16,600 | 28,600 | 34,900 | 40,100 | 120,200 |
| Distribution | - | 2,545 | 4,200 | 4,600 | 5,000 | 16,345 |
| Total Research Journal | - | 20,855 | 35,600 | 42,670 | 48,540 | 147,665 |
| Newsletter | | | | | | |
| Translation | 200 | 470 | 540 | 620 | 720 | 2,550 |
| Printing | 1,550 | 3,600 | 4,100 | 4,700 | 5,400 | 19,350 |
| Distribution | 1,150 | 2,500 | 2,700 | 2,900 | 3,200 | 12,450 |
| Total Newsletter | 2,900 | 6,570 | 7,340 | 8,220 | 9,320 | 34,350 |

Based on quotations from the Printing and Publishing Company Botswana (PVT) Ltd., P.O. Box 130, Gaborone, plus 15% inflation per year (10% inflation for distribution).

Note: 1. Research journal cost based on each issue of 2,000 copies a year, an issue of 100 pages on A4 paper. Assume 2 issues 2nd year and 3 per year thereafter.

2. Newsletter costs based on 2,000 copies per issue on A4 size paper, two color background and 10 pictures.

3. Figures in the budget in text are for two issues of journal in 2nd year, each of 2,000 copies rising to three issues per year subsequently.

4. Budget for newsletter is based on two issues in first year and 4 issues per year subsequently.

Annex 6

## CAPITAL ESTIMATES - BUILDINGS

### PRELIMINARY ESTIMATE OF CONSTRUCTION COST FOR PROPOSED SADCC AGRICULTURAL RESEARCH UNIT[1/]

15th July, 1983

| | | | |
|---|---|---|---|
| **Buildings** | | | |
| i) | Office Block (210m²)[2/] | 75,000 | |
| | Note: P15,000 included in above estimate for air conditioning units special flooring Computer Room | | |
| ii) | No. 4 Type II Houses with Servants Quarters[3/] | 190,000 | |
| iii) | No. 2 Type M2 Houses | 39,000 | |
| iv) | No. 3 Type LCH (P) Houses | 67,500 | |
| | | | 371,500 |
| **Site Works and Services** | | | |
| Comprising water and drainage reticulation, fencing, electrical supply and reticulation | | | 65,500 |
| | | | 437,000 |
| Professional Fees | | | 23,000 |
| | | | 460,000 |
| Contingencies | | | 46,000 |
| Total Capital Estimate - Buildings | | | 506,000 |

1/ NOTE: Above estimate based upon prices current July 1983. Provision for escalation should be added at the rate of 12% annum until commencement of construction; over construction period (say 6 months) at 50% of that factor.

Obtained from: The Architect, Architectural and Buildings Department, Ministry of Works and Communications, Gaborone, Botswana

Annex 6

SADCC AGRICULTURAL RESEARCH UNIT

2/ OFFICES would comprise:

| | |
|---|---|
| Director | 15m² |
| PA to Director | 8 |
| Manpower/Training Officer | 10 |
| Information/Publication Officer | 8 |
| Admin/Accounts Officer | 8 |
| 3 Typists (Pool) | 15 |
| 2 Researchers | 15 |
| Committee Room for 10 | 15 |
| Photocopying | 8 |
| Computer Room | 10 |
| Printing Room W. Store 6 + 4 | 10 |
| Toilets 6 + 6 | 12 |
| Kitchenette | 6 |
| Cleaners | 4 |
| Driver/Messenger | 6 |
| Total | 150m² net |

Say gross factor e.g. 1.4
150 x 1.4 = 210

Offices total 210 m² gross

3/ HOUSING would comprise:

| | |
|---|---|
| 4 Nos Type II (3 bedroom) | 125m² |
| 2 Nos M2 (2 bedroom) | 50m² |
| 3 Nos low-cost | 68m² |

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAASA | Association for the Advancement of Agricultural Sciences in Africa |
| ACIAR | Australian Centre for International Agricultural Research |
| AGRIS | International Information System for the Agricultural Sciences and Technology |
| AVRDC | Asian Vegetable Research and Development Centre, Taiwan |
| CAB | Commonwealth Agricultural Bureaux |
| CARIS | Current Agricultural Research Information System |
| CDA | Cooperation for Development in Africa |
| CGIAR | Consultative Group on International Agricultural Research |
| CIAT | International Centre for Tropical Agriculture, Colombia |
| CIDA | Canadian International Development Agency |
| CIMMYT | International Maize and Wheat Improvement Centre, Mexico |
| CIP | International Potato Center, Peru |
| CRSP | Collaborative Research Support Program (USAID) |
| CTC | Consultative Technical Committee of SADCC |
| DANIDA | Danish Agency for International Development |
| EAFRO | East African Agricultural and Forestry Research Organization |
| EAPQS | East African Plant Quarantine Service |
| EAVRO | East African Veterinary Research Organization |
| ECA | Economic Commission for Africa |
| EEC | European Economic Commission |
| FAO | Food and Agriculture Organization of the United Nations |
| IADS | International Agricultural Development Service |
| IAEA | International Atomic Energy Agency |
| IARC | International Agricultural Research Centre |
| IBPGR | International Board for Plant Genetic Resources |

| | |
|---|---|
| FSR | Farming Systems Research |
| IBRD | International Bank for Reconstruction and Development |
| ICARDA | International Centre for Research in Dry Areas, Syria |
| ICIPE | International Centre for Insect Physiology and Ecology, Kenya |
| ICRISAT | International Crops Research Institute for the Semi-Arid Tropics, India |
| IDRC | International Development Research Center, Canada |
| IFAD | International Fund for Agricultural Development |
| IFARD | International Federation of Agricultural Research Systems for Development |
| IFS | International Foundation for Science, Sweden |
| IITA | International Institute of Tropical Agriculture, Nigeria |
| ILCA | International Livestock Centre for Africa, Ethiopia |
| ILRAD | International Laboratory for Research on Animal Diseases, Kenya |
| IRRI | International Rice Research Institute, Philippines |
| ISAS | Institute of Southern African Studies, Lesotho |
| ISNAR | Institute Service for National Agricultural Research, The Netherlands |
| KARI | Kenya Agricultural Research Institute |
| MAWD | Ministry of Agriculture and Water Development, Zambia |
| NARS | National Agricultural Research Systems |
| NORAD | Norwegian Agency for International Development |
| OAU/STRC | Organization of African Unity's Scientific, Technical and Research Commission |
| ODA | Overseas Development Administration, United Kingdom Government |
| SACCAR | Southern Africa Centre for Coordination of Agricultural Research |
| SADCC | Southern Africa Development Coordination Conference |
| SAFGRAD | Semi-Arid Food Grain Research and Development |

| | |
|---|---|
| SARCCUS | Southern African Regional Commission for the Conservation and Utilization of the Soil |
| SAREC | Swedish Agency for Research Cooperation in Developing Countries |
| SIDA | Swedish International Development Agency |
| UNDP | United Nations Development Program |
| USAID | United States Agency for International Development |
| USDA | United States Department of Agriculture |
| WHO | World Health Organization |