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CONSULTANCY REPORT ON MANAGEMENT INFORMATION SYSTEMS ASSESSMENT FOR THE COOPERATIVE AGRICULTURE AND AGRIBUSINESS PROJECT

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LIST OF ACRONYMS

AC	Assistant Commissioner
ACO	Assistant Cooperative Officer
APC	Agricultural Policy Committee
AS	Agricultural Secretariat
BOU	Bank of Uganda
CAAS	Cooperative Agriculture and Agribusiness Support
CCD	Commissioner of Cooperative Development
CCS	Cooperative Credit Scheme
CMB	Coffee Marketing Board
CO	Cooperative Officer
CSA	Computer Systems Administrator
DBA	Data Base Administrator
DCCD	Deputy Commissioner for Cooperative Development
DOS	Disk Operating System
DU	District Union
LMB	Lint Marketing Board
MCM-CD	Ministry of Cooperatives and Marketing Cooperative Development Department
MCM-Mktg	Ministry of Cooperatives and Marketing Marketing Department
MCM-Pl	Ministry of Cooperatives and Marketing Planning Unit
NICU	National Inputs Coordination Unit
PACO	Principal Assistant Cooperative Officer
PCO	Principal Cooperative Officer
PMB	Produce Marketing Board
PrS	Primary Society
PS	Permanent Secretary
RAM	Random Access Memory
RMO	Regional Marketing Officer
RSS	Rural Savings Scheme
SACO	Senior Assistant Cooperative Officer
SCO	Senior Cooperative Officer
UCA	Uganda Cooperative Alliance
UCA/BSL	Uganda Cooperative Alliance/Business Services Ltd.
UCCU	Uganda Central Cooperative Union
UCSCU	Uganda Credit and Savings Cooperative Union
UCTU	Uganda Central Transport Union
WOCAP	Women's Cooperative Activities Program

PROJECT BACKGROUND

The goal of the Cooperative Agriculture and Agribusiness Support Project (CAAS) is to raise the standard of living in Uganda through increased agricultural productivity and production. The project purpose is (1) to increase agricultural productivity and production through increased supply of agricultural inputs, (2) to help place input supply and output marketing on a sound commercial basis, and (3) to stimulate agribusiness development. To achieve these purposes the project will work at three levels:

(1) policy improvement, focused on input distribution and commodity marketing;

(2) institutional development, focused on a select set of key organizations in the agricultural arena; and

(3) increased input supply, focused on a handful of key agriculture sector commodities.

The CAAS project has two major components: a cooperative development component, and a commodity import component structured according to the provisions of A.I.D. Regulation 1. The cooperative development component will provide assistance for improving policies and institutional performance so that input distribution and commodity marketing can be done with greater efficiency and effectiveness. The commodity import component is designed to address short-term foreign exchange constraints while increasing the availability of essential agricultural sector inputs such as seed, jute fertilizer, and agricultural implements.

Even though the cooperative sector is currently the best-performing system for distributing inputs to the nation's farmers, it's performance is weakened by undercapitalization and poor management, and hindered by pricing policies left over from the 1970's. Participation in a commercially-oriented A.I.D. Regulation 1 CIP will give participating private entities, including cooperatives, an opportunity to recapitalize and improve their financial standing. The cooperative development program will support this by helping to improve financial management and management performance in the cooperatives, and by assisting key agriculture sector organizations to improve their policy analysis and policy formulation capabilities.

Hence there is a strong complementary between the two project components. Although each can proceed independently of the other, their joint effects are expected to have a major impact on the availability of farm inputs throughout the country.

The departments of Cooperative Development, and Marketing, the Planning Unit, UCCU, UCA and NICU are all planning to improve their information collection and computerized data storage and management (MIS) under the CAAS Project, thus the reason for this consultancy.

INTRODUCTION

The consultant arrived in Uganda on April 22, 1989, to work on the Cooperative Agriculture and Agribusiness Support (CAAS) Project. The CAAS Project objectives include assistance for six organizations as listed below:

1. Agricultural Secretariat - National Inputs Coordination Unit
2. Ministry of Cooperatives and Marketing - Marketing Department
3. Ministry of Cooperatives and Marketing - Cooperative Development Department
4. Ministry of Cooperatives and Marketing - Planning Unit
5. Uganda Central Cooperative Union
6. Uganda Cooperative Alliance - Cooperative Development Section

The assistance includes assessing, designing and implementing a management information system. The specific scope of work for this consultancy includes the assessment of the management information system needs and preparation of a systems design for the six organizations.

The consultancy was scheduled to last for approximately two months, allowing only about one week for each organization. Therefore the conceptual design is general in nature, but provides enough direction to computer systems analysts/programmers to begin work on development of database and spreadsheet programs, as well as some specific application package installations. The formal scope of work was as follows:

A. The MIS Specialist will hold a one day workshop with the relative representative from each entity at the start of the assignment. The purpose will be to define terminology, identify individual requirements, clarify MIS setup, and explain the terms of reference. A follow-up workshop will be held after the first month to cover points in terms of reference 2. e. and g.

B. Working with the various entities (MCM, UCA, UCCU, and NICU) the consultant will:

1. Identify the needs of each entity involved that will be served by an MIS.

2. Define and collate their needs in terms essential for MIS design.

3. Develop specifications considering the following:

a. The unique needs for each entity.
Illustratively in UCA, this will include:

1. Identifying data requirements for different purposes with the fields of policy, planning and agribusiness development.

2. Identifying sources of information for the required data.

3. Identifying and planning channels of information flow in the system.

4. Developing a format for data collection.

b. The common interests and potential for interagency cooperation with support services.

4. Prepare a preliminary estimate of requirements for development, installation, training of personnel, and operation of systems.

5. Discuss results cf foregoing analysis with each entity and all entities as a group; obtain suggestions for change; make revisions.

6. Develop detailed parameters of various systems including equipment (hardware and software), personnel and personnel training, technical assistance to implement the system; total costs of equipment, installation and operation, etc.

7. Discuss the above with technical and management personnel of respective entities and CAAS project leadership. Reach agreement on systems specifications, resources to be allocated, etc.

8. Prepare specifications for needed imported commodities; initiate procurement through CAAS office.

9. Take other steps feasible at this time to initiate the program, e.g. training of personnel.

10. Define implementation requirements and steps in various entities necessary in establishing each MIS.

11. Prepare a scope of work and schedule a second follow-up visit to assist in putting each MIS into operation (estimated at 30-60 days). Specify if additional technical assistance is required with specific terms of reference.

12. Plan subsequent visits during the second visit, if needed.

13. Produce a draft covering the above mentioned terms of reference which will be submitted to Tom Carr, Cooperative Development Advisor/Contractor's Representative prior to departure from Uganda. A final report must be submitted to ACDI within two weeks from the close of contract. ACDI will assist in preparing the 30 required copies. The outline of the report should be agreed to by ACDI and Tom Carr prior to report preparation.

14. Other duties may be assigned by Tom Carr, Cooperative

Development Advisor/Contractor's Representative, which are consistent with the overall scope of this assignment.

It should be noted that the consultant and Tom Carr, Cooperative Development Advisor/Contractor's Representative, agreed to amend the scope of work at the initiation of the consultancy. The changes agreed to were:

A. - The MIS specialist would not hold a one day workshop but would rather work individually with each of the organization's representatives in defining and customizing an MIS that would meet that organization's particular needs, discussing the MIS concept and objectives of computerizing. The Executive Summary in this report discusses the MIS concept and how it relates to the organizations studied. Appendix B is a narrative "handout" that was prepared to introduce the MIS concept to those not familiar with MIS, its definition and the important role it plays in the overall performance of every organization.

B. - It was decided that due to the newness of the UCA Cooperative Development Department and the undefined responsibility for information management of the organization, that preliminary steps were necessary in order to prepare for the MIS design. Therefore, an MIS assessment would occur for only five organizations. An action plan was prepared by a CAAS project consultant and an agreement was reached between the UCA Cooperative Development section and CAAS representatives to continue with the proposed plan of action, which included identifying the type of information which needed to be collected, and the role of the UCA/CD in collecting and providing information. Appendix C outlines the preliminary work to be done previous to the MIS assessment, and Appendix D is a suggested Terms of Reference for the Agricultural Information Specialist recommended to work with NICU.

During the introductory meetings with the six organization's representatives it was adamantly expressed that although the purpose of this consultancy was to only assess the management information systems needs of the organizations, it is within the objectives of the CAAS Project to follow-up the assessment with actual development of programs necessary to develop an effective management information system for the organizations. The consultant who prepared this report was extended for four additional weeks in order to install computer systems, provide initial training, and begin the task of specific computer programming identified in this assessment. In addition, another computer consultant was to be contracted for 4-8 weeks to do computer programming, again in support of the assessment.

It was however stressed that the list of computer program needs for the organizations studied was so lengthy that it would require a prioritization of desired reports and programs and only a portion of those would be accomplished during the consultancies, and likely the life of the CAAS project.

In writing the report the consultant has conveyed the results of the

assessment to a diverse audience, including cooperative management as well as computer systems analysts/programmers, who will use this report to begin computer program development in support of the implementation of an MIS for each of the organizations. Every attempt has been made to summarize the results of the assessment in non-technical terms in the Executive Summary of this report, while providing the more technical information in the individual Assessment/Recommendations area of the report.

WORK PLAN

In order to fulfill the terms of reference the consultant followed a similar work plan for each of the organizations studied. That work plan is shown below:

1. Review mission statement.
2. Review organization chart.
3. Review reports requested.
4. Review reports prepared as a result of surveys and questionnaires and determine the objectives.
5. Determine how surveys and questionnaires are designed and if all the information collected is complete and useful.
6. Determine computer equipment currently available and planned for the organization through CAAS or otherwise.
7. Determine computer hardware/software being utilized.
8. Review computer capabilities and experience of staff.
9. Determine if internal training is possible?
10. Determine if external training should occur, taking into account the CAAS training budget?
11. Review what computer work has been done, utilizing what software and how the programs are modified and updated.
12. Determine problems with data collection and identify any other constraints to developing an MIS.
13. Develop a list of current and suggested reports based on their submission of information. Include sources of information, primary and secondary. Detail by data elements, if possible and necessary.
14. Determine who reports are prepared for and what the objective is.
15. Develop a list of computer development to be done and what hardware/software is required.
16. Determine if there are there any complex, e.g. statistical, analyses done?
17. Assess the possibility of data sharing and/or networking with other organizations.
18. Outline any suggested long term plans for supporting the suggested MIS, ongoing reporting, modifications, maintenance and development, and training.

The system development process that the consultant used was divided into a number of activities, as referred to in the Work Plan. The most time consuming activity of that process was the collection of information which was necessary in order to identify the management information system needs of the organization.

After reviewing the organizational structure of the organizations, employees which were representative of the organizations activities were interviewed and information collected to determine the most urgent information needs.

Under normal circumstances development of a management information system would involve interviewing to determine information needs at

three levels in the organization, top management who makes strategic planning decisions, middle management who does tactical planning and performs management control, and operational or low management who is responsible for operational control of the organization. Considering the infancy stage of the development of a management information system for the organizations, and the lack of computer hardware at all levels of the organization, the consultant concentrated most of his efforts on the top two levels, which were considered to be most important in the overall effectiveness and impact of the organizations.

On the following pages is an MIS assessment and related recommendations for each of the organizations studied. Included is a description of their mission, staff comments, computer capabilities, major constraints to developing an MIS, current and future data requirements and recommended MIS reports/design, computer hardware/software recommendations, staff computer training requirements and long term MIS recommendations. For simplicity and ease of reading this report, the same format has been followed for each of the organizations.

See Appendix A for a complete list of contacts in the organizations studied.

EXECUTIVE SUMMARY

A Management Information System (MIS) is an organized method of providing past, present, and future information relating to internal operations and external intelligence. Ideally, it will support the planning, control, and operational functions of each of the organizations studied by furnishing uniform and accurate information timely enough to support the decision-making process.

All of the organizations the consultant worked with have some sort of an existing management information system, and almost all are manual. One requires management information generated almost totally internally, i.e. UCCU, or could be considered a self-contained business, whereas most of the organizations collect and require information from many external sources, intensifying the importance of data collection, which is a necessary component and prerequisite to developing an MIS.

The National Inputs Coordination Unit of the Agricultural Secretariat is the most complex of the organizations studied in terms of the number of organizations interacted with and information is required from, so they can provide management with the information they need in order to make the appropriate management decisions. Most of the information NICU utilizes comes from secondary sources.

The most significant limitations that the consultant found in developing an MIS for all the organizations are noted below:

1. Data Collection - Data collection was the most serious of all problems encountered in the current information system and in the future development of a computerized management information system. With the exception of the UCCU, which generates most of its management information internally, data collection by the other organizations is neither accurate, timely, or complete; all are prerequisites to providing a meaningful MIS. In most cases requirements for submission of reports exists, but no authority is exerted, and no discipline enacted when reports are not submitted. When data is collected by an organization it is often inconsistent with data collected from other organizations.

It is possible for good personnel and poor methodology to compensate for each other; it is not possible to compensate for inadequate input. A useful and accurate MIS cannot be developed no matter how good the initial design, if accurate, timely, and complete primary and secondary data is not made available.

A common practice is for, i.e. Ministry staff to collect primary data through field trips made by the staff rather than the submission of reports. However, the necessary funds have not been available for staff to take field trips and much primary data has still not been collected.

2. **Computer Hardware/Software Availability** - Access to the necessary computer equipment to develop, modify and maintain the necessary computer programs will be limited due to the number of computers available to the organizations. Although it would be preferable to the consultant to suggest multiple units for most of the organizations studied, it is a reality that the CAAS Project budget provides for a limited amount of computer equipment and related software, as well as the necessary training. Because of this shortage of computer equipment, it will become evident that some computers will be placed in the wrong location, because position rather than efficient utilization will determine placing of the equipment. Computer systems to be purchased under the CAAS Project and the destinations are as follows:

No. of Computer Systems	Destination
1	AS - NICU
1	MCM - Cooperative Development Dept.
1	MCM - Marketing Dept.
1	MCM - Permanent Secretary
1	UCA - Audit Section
1	UCCU - Input Advisor
3	CAAS Project Office

Refer to Appendix H for costs of computer hardware approved for purchase and software recommended in this report.

3. **Financial Budget** - Financial constraints are a major determining factor affecting the level of computerization. Funds do not exist for aggressive computer training and ongoing hardware/software maintenance and supplies. However, it should be noted that the CAAS budget includes a substantial amount of local shilling funds for the support of staff computer training and associated computerization costs, at least throughout the life of the CAAS Project. The organizations are encouraged to budget for continued MIS development.

4. **Training Availability and Software Support** - The amount and quality of local computer training and software support limits the range of software that can be utilized. It is impractical to train many different people in numerous organizations to be experts in the use of specific applications software that meets the needs of only their organization and in particular, their data or analysis needs. Therefore, the consultant has suggested that the number of software packages utilized be kept to a minimum. The benefits of not requiring extraordinary amounts of software support and training far outweighs the cost of using a software package that is not perfectly suited to the particular task to be accomplished.

5. **Retention of Computer-Trained Staff** - It is difficult in an environment such as exists in the organizations studied to retain well trained staff. Computer skills are at a premium in an environment which is just in the initial stages of MIS development.

6. **Staff Computer Capabilities** - Very few of the staff members in the organizations had any computer training. Some organizations had

no computer training. Those who were trained generally learned only word processing and most who received training in other areas received the training long ago and were not able to develop their skills due to the limited access of computer equipment.

7. MIS Development Phases - It is preferable to have the MIS development occur in separate phases as listed below:

A. Order and accept delivery on the initial computer equipment configuration.
B. Perform computer hardware and software installation and initial training. Identify additional training requirements.
C. Train through both through local, external and within staff training.
D. Perform MIS needs assessment.
E. Make second computer hardware/software order, deliver and install.
F. Perform initial development stage for MIS. Identify what external consulting is required and what can be accomplished internally.
G. Perform overall MIS development.
H. Perform follow-up MIS development assessment, including additional training, modification of existing systems, additional hardware and software needs identification.

However, the length of the CAAS Project and other reasons prevent such a systematic approach. Had the above approach been used it would have been possible for the MIS assessment to more specifically identify programs necessary to meet information needs, not the more skeletal or conceptual approach which was necessary, in some cases. This more specific identification could have occurred due to the ability of computer-literate staff having a better understanding of conveying to the consultant the information needs they have that are within the scope of the available computer hardware and software. Nevertheless, the results of this assessment are very specific in some cases, and provides the organizations with an extensive list of programs for MIS implementation.

8. Data Sharing - Data sharing is difficult for the organizations due to lack of communication and the inability to interface by networking computer systems together. It is recommended that one organization be assigned the responsibility of assembling a list of reports including the title, subject, date, information included therein, author, and physical location. The dBase IV software could be used to sort the list of information in whatever method necessary, e.g. a list of reports done by the MCM-Planning Unit, all reports with export data, etc. See Appendix G for suggested data fields for this list of information.

Some information areas which may be considered for data sharing in the future are prices and pricing, supply, distribution, cost estimating for both farm production and marketing operations, transport, accounting and finance, agricultural policy, etc. The cumulative information needs for the Planning Unit of the MCM were duplicated almost identically by that of the other organizations, suggesting

that data sharing would eliminate duplication of effort. A discussion of this is found in the Planning Unit section of this report.

Although networking is not practical at this time, due to the lack of sophistication and more importantly the inadequacy of data (telephone) lines, it should be encouraged to transfer data from one computer to the other by means of floppy diskettes. This can greatly enhance the sharing of information, assisting in the consistency of like data, which has been a problem in the past.

Database design is one of the major activities of the system development process. It is a difficult, complex and time-consuming task. Most of organizations studied require the development of a database in at least part of their MIS design.

A successful database design must satisfy three criteria. First, the input to the design process must be complete, consistent and usable. Second, the design methodology must be sound and must effectively use the input provided. Third, technical and user personnel must interact and communicate effectively. Also, design methodology and input preparation procedures must be followed and utilized by the personnel.

The Agricultural Secretariat - NICU is the institution whose operations most closely resemble that of top management of an organization. Their strategic planning responsibilities and collection of macro data in support of strategic and policy making decisions is responsible for the complexity of their database requirements, which deal with a large number of institutions. Therefore their management information system needs are by far the most conceptually complex and far reaching of all the organizations studied.

A large database of information, utilizing a quality relational database software package with the ability to export information from the database into other analysis software was the only practical way to develop a management information system for the NICU. One shortcoming of such a management information system is the importance it places on the completeness and accuracy of the information collected to build the database. It must be stressed that in NICU, as well as the other organizations studied, it is important to do a major portion of the decision making with information collected into smaller analysis modules, such as spreadsheets or small databases, so as to minimize the problem of interacting with incomplete databases.

The Ministry of Cooperatives and Marketing, Cooperative Development Department has a large number of programs which need to be developed, mainly because of the diversity of the department. The department is made up of seven different sections and their responsibilities range from audit to registration office functions. A database design was created in dBase during the consultant's visit and reports are now being generated on a database that will include over 1,000 primary societies.

The efforts of UCA/Business Services Ltd. should be encouraged and

accelerated in the UCCU. The Hogia system should be fully supported by UCCU and as soon as accounts are brought up to date and current financial statements are completed, the inventory/stock control system should undergo a complete evaluation and then implementation phase.

Particular attention should be paid to the consultant's recommendations for designated Computer Systems Administrators (CSAs) and Data Base Administrators (DBAs). These highly trained staff members are the key to an outreaching and aggressive MIS.

The Assessment/Recommendations section of this report covers each of the organizations studied in detail.

Follow-up Recommendations

Much follow-up work is necessary to insure that the MIS development occurs as planned in the organizations studied. Below is a list of specific follow-up activities that should occur:

1. Computer hardware and software installations should be evaluated and modifications made when necessary. The current staff capabilities of most of the organizations is not adequate to expect them to install the equipment in the most efficient manner with no problems. Each of the organizations will require slightly different installations and configurations. This evaluation should also include assessing the adequacy of hardware and software purchased to meet the organization's ever-changing needs, and recommendations for additional hardware and software made, referring to the consultant's computer hardware/software recommendations.

2. The Uganda Cooperative Alliance Cooperative Development section must be assessed as to their MIS needs, in light of the preliminary work that is to be done as outlined in Appendix C. This is due to the change in the consultant's TOR discussed earlier in this report. A suggested terms of reference for an agricultural information specialist is provided as Appendix D. This person must be brought in immediately and their work completed before additional MIS assessment occurs with the UCA.

3. The adequacy of computer training given by external sources and UCA/Business Services Ltd. should be determined and additional training needs identified and planned within the local shilling and CAAS project budget. Special attention should be given to the use of tutorials available with the applications software which was purchased. This report outlines specific training needs for each of the organizations. The evaluation of training must occur after some training has been completed.

4. A follow-up assessment of the initial MIS needs of the organization should occur, but approached as a continual process. The purpose of this assessment should be to modify and add to the MIS requirements identified in this report. It is a certainty that additional databases of information required will be identified in the future. Their relationship to the overall database design and their

relationship to existing and new reports must be identified and programmed.

5. A never-ending list of software programming, mostly in dBase IV and spreadsheets, must be accomplished in order to provide the users with the information they desire. Appendices E and F are provided as suggested terms of reference for a systems analyst/programmer for the Agricultural Secretariat/NICU, and for a computer development specialist/coordinator to coordinate the overall development process while working with UCCU on defining procedural problems with the flow of information which must be resolved previous to MIS development.

It is preferable to have one computer development consultant responsible for all the above activities on a long term (2 year) consultancy, rather than divide the computer development activities among several short term consultancies. Consistency in approach and knowledge and experience in working with the organizations is an important component to completing the MIS development. A longer term approach also allows for time to modify the existing MIS of the organizations and to insure that appropriate training has occurred for the organizations to become self-supporting.

6. A consultant should help the organizations in developing their initial internal training programs, utilizing a train-the-trainer approach. After people have been trained, they should be used, whenever feasible, to train other staff. The organizations must develop their own computer skills in order to most effectively create an MIS that is most responsive to their needs. Not only does training assist them in understanding what the computer programs are capable of doing for them, but it ultimately minimizes their dependency on outside consulting assistance.

7. Much preliminary work needs to be done regarding the creation of an agricultural database that all the cooperative organizations can share and contribute to. Before such a database is designed it will be necessary to do much policy work on how the creation of the database will occur, including responsibilities for creation and maintenance, authorities for collection of information, who will share the database, etc. These questions must be answered before a consultant is asked to design the system and proceed with development. Top management of the organizations need to meet to develop a work plan and assign responsibilities for the creation, implementation, and support of an agricultural database.

Constraints and recommendations relating to the Assessment/Recommendations section for each organization are noted below:

Agricultural Secretariat - NICU

Constraint

1. Inadequate data collection.

Recommendations

1. Re-evaluate questionnaire's design.
2. Compile list of reports/information available.
3. Purchase of two computer systems and software.
4. Undergo computer training, including a DBA/CSA.
5. Begin policy work regarding development of an agricultural database.
6. CAAS Project provide a three month consultancy for dBase and spreadsheet work (see Appendix E).

Ministry of Cooperatives and Marketing - Marketing Department

Constraints

1. Inadequate data collection.
2. Undefined data flow.
3. Staff immobilization.
4. Little computer-trained staff retention.

Recommendations

1. Purchase of one computer system and software.
2. Undergo computer training, including a CSA.
3. Utilize UCA - Business Services Ltd. for computer program development; coordinated through a three month consultancy provided by the CAAS Project (see Appendix F).

Ministry of Cooperatives and Marketing - Cooperative Development Department

Constraint

1. Inadequate data collection.

Recommendations

1. Purchase of four computer systems and software.
2. Undergo computer training, including a CSA for each system.
3. Utilize UCA - Business Services Ltd. for computer program development; coordinated through a three month consultancy provided by the CAAS Project (see Appendix F).

Ministry of Cooperatives and Marketing - Planning Unit

Constraints

1. Inadequate quantifiable data collection.
2. Data collection is not standardized.
3. Undefined data flow.
4. Inadequate secretarial services and office supplies.

Recommendations

1. Purchase of one computer system and software.
2. Undergo computer training, including a CSA.
3. Utilize UCA - Business Services Ltd. for computer program development; coordinated through a three month consultancy provided by the CAAS Project (see Appendix F).

Uganda Central Cooperative Union

Constraints

1. Lack of computer trained staff.
2. Inadequate power and communications facilities.
3. Undefined information flow; bottlenecks.
4. Inadequate office supplies.

Recommendations

1. Purchase 3-5 computer systems and software.
2. Undergo computer training, including a CSA.
3. Designate the Machine Room Supervisor the CSA.
4. Aggressively support the UCA/BSL in the computerization of a complete accounting and inventory/stock control system.
5. Pursue computerization of the auditing through the Hogia system.
6. Utilize a short term consultant provided through the CAAS Project to evaluate and provide recommendations for solving the procedural information flow problems, previous to development of a management information system.
7. Continue to work with UCA/BSL in the development of computer to support the MIS.

Uganda Cooperative Alliance - Cooperative Development Section

Constraint

1. Data requirements and sources are not well defined.

Recommendation

1. Utilize a short term consultant to identify data requirements, sources and methods of collection (see Appendix D for a suggested TOR).

ASSESSMENT/RECOMMENDATIONS

Agricultural Secretariat

National Inputs Coordination Unit (NICU)

Mission Statement Summary

The Agricultural Secretariat functions as the analytical arm of the President's Agricultural Policy Committee (APC), which is the decision-making body for agriculture sector policy. The Secretariat is responsible for assessing agriculture sector performance and problems, formulating policy options, and monitoring implementation of the most significant policies and programs.

The National Inputs Coordination Unit (NICU) established within the Secretariat has the following objectives:

1. Monitor volumes and prices of inputs entering or being produced in Uganda.

2. Monitor the distribution of these inputs as to destinations, margins, dealer costs, and major problems in distribution.

3. Analyze the costs and benefits of technical packages and generate a positive list of inputs required.

4. Publish quarterly situation reports on its findings to serve as the basis for interaction between the Government of Uganda and major donor agencies.

5. Assess the potential and feasibility of local production of relevant inputs and make recommendations on priority investments for expanded input production.

6. Undertake a survey of existing studies.

Staff Comments

The NICU is small in size as it currently has only six employees, most with agricultural economics or statistics/analysis training. The staff is generally highly educated and some, i.e. agricultural economist, have taken numerous computer training classes making them capable of utilizing the computer equipment efficiently.

Computer Capabilities

The NICU currently has one computer available to use for data collection, word processing and analysis. Another unit must be shared with the Agricultural Secretariat and yet another is under repair. The CAAS Project has budgeted for one computer system to be assigned

to the NICU.

Some staff has had training on computer usage but the training was held some time ago and staff has not had the opportunity to use and develop their computer skills. Computer training has been budgeted for in the CAAS Project and specific courses have been identified through a separate consultancy recently undertaken on the CAAS Project. The budget for all training for the entire life of the CAAS Project is $50,000; computer training should represent a good portion of that. In specific, the following computer training should be undertaken, or refresher courses taken if found necessary:

Agricultural Economist - dBase IV, Lotus 1-2-3
Analysts - dBase IV, Lotus 1-2-3, System Administrator (DOS)
Statistical Assistant - DOS, Lotus 1-2-3, Word Processing
Word Processing Operator - Lotus 1-2-3, Word Processing

There are currently three people from the NICU attending computer training classes.

Major Constraint

The most significant constraint regarding the development of an MIS for the NICU is the collection of accurate, complete, and timely primary and secondary data. The most effective way for the NICU to manage a database of information is to create several smaller databases, utilizing a relational database program to minimize as much as possible the problems associated with a large database which is not complete or accurate and which affects the reliability of all reports. Simplicity is the key in such an environment.

Reports/MIS Design

The Agricultural Secretariat collects large quantities of information from many sources. The organization's data needs include the following:

1. Macroeconomic data on the economy
   a. Inflation rates
   b. Exchange rates
   c. GDP and GNP figures
   d. Monetary situation
   e. Infrastructural development

2. Macroeconomic data on the agricultural sector
   a. Contribution to GDP and government revenue
   b. Contribution to foreign exchange earnings
   c. Overall growth rates
   d. Employment in monetary and non-monetary sectors
   e. Structure of agriculture, e.g. extension research
   f. Budgetary allocations
   g. Export taxes

3. Sub-sectoral data in the agricultural sector
   a. Cash crops sector (for each crop)
   b. Food crops (for major crops)
   c. Livestock and fisheries
   d. Forestry
   e. Agro-processing
   f. Inputs production and imports
   g. Credit facilities
   h. Marketing and associated infrastructure

Specific information needs for crops, livestock, and forestry are shown below:

1. Production aspects
   a. Location of production
   b. Quantities produced (area, output)
   c. Production trends
   d. Costs of production (labor, wages, input usage)

2. Collection and processing aspects
   a. Type and number of collection systems (private, cooperative, parastatal)
   b. Collection costs
   c. Type and capacity of processing
   d. Capacity utilization
   e. Processing costs
   f. Quantities from each district

3. Internal and external marketing
   a. Percentages and quantities going to each market segment
   b. Functionaries involved in marketing and their shares
   c. Costs of marketing
   d. Marketing channels and constraints
   e. International price and commodity projections

The information needs of the Agricultural Secretariat as a whole is much greater than that of the NICU. However, it would be appropriate to plan and develop the databases of information required by NICU in conjunction with the entire AS, due to the likeness in types of information maintained, the relationship of the organizations (NICU is a unit within the AS) and personnel, and the close proximity of the organization which will assist in data sharing.

The NICU is more specifically interested in data relating to inputs, both local and imported. As a priority, databases of information should be collected to identify types of inputs (classification), and production costs including raw materials. Specific attention should also be placed on the creation of a database with the objective of analyzing the input survey results. Reports should be created in the dBase IV software to analyze past imports and projections by type and category of inputs. It should also provide for an listing and analysis of distribution, arranged by inputs and including financing arrangements. Other information can be obtained from the survey data, including typical margins, and turnover/stock ratios by type of input.

Some data which should be included in the dBase IV database includes:

1. Agricultural production statistics for Uganda.
2. Exports and imports of main crops.
3. Uganda trade in selected products.
4. World market prices of key agricultural products produced in Uganda.
5. Producer price information (Uganda and other developing countries).
6. Subsidy information from developing countries.
7. Volumes and prices of inputs entering or being produced in Uganda.
8. Distribution of inputs as to destinations, margins, and dealer costs.

Much of the information and a list of sources can be found in a recent report of the Agricultural Policy Committee-Task Forces Report dated April 15, 198'. An immediate task after computer installation and initial training should be to develop the databases of information utilizing the dBase IV software and creation of reports from those databases. A dBase IV programmer, with NICU staff assisting in identifying specific output and desired analysis, will be necessary to perform the task of developing the necessary databases and preparing the associated reports, which draw specific information from the data according to the particular needs of the individual users and their objectives, or reasons for accessing the databases.

Most of NICU's information needs are from secondary sources, although some primary data is being collected through field questionnaires. Appendix I lists the sources of data for NICU, broken down by primary and secondary sources. It was noted that only 20-40% of information collected through the use of questionnaires was used in subsequent reports, suggesting that much unused information was collected. Collection of data through primary sources should be limited to the list of information that has been determined to be useful for reporting (see list above). Perhaps responsibilities for design of questionnaires needs to be reevaluated.

In order to computerize information required to meet the needs of the Agricultural Secretariat/NICU, it is necessary that a list of all documents containing the desired information be compiled. Refer to the recommendation in the Executive Summary in which it is suggested that data sharing start with the compilation of a cumulative list of data available from all the organizations wishing to access each other's database. This must be done to accomplish data input in building a database and equally important, to provide other organizations they wish to share data with a list of data that is available from them, thereby avoiding duplication of effort.

Appendix G is provided to show a suggested format for a cumulative list of reports (information) available. Appendix I is a list of sources of data for the NICU. Appendix J is a listing of reports currently identified as sources of information for the NICU.

Information should be extracted from Appendix J into the format shown in Appendix G. It will provide a continually growing list as new sources of information and new information needs are identified, and additional reports are generated.

It is suggested that the resulting list from the format in Appendix G be created by several different indexes. In order to facilitate this the most practical way to create the report is by using a database manager, thereby providing the ability to search for information by organization, date, subject, title, or information available.

A report titled "A Survey of Agricultural Inputs in Uganda: Production, Distribution and Consumption" will become available soon. Information which will be quite useful in the suggested databases introduced later in this section includes:

1. National Level - Data collection from and interviews with importers and other organizations, including government departments.

2. Distribution Level - Selected cooperatives, UCCU, farm supply shops and private distributors.

3. Farm Level - Farmers interviews in five selected districts (two with a concentration of livestock and three with a concentration of crops) to determine usage and demand at farm level.

4. Local Production - Interviews with local producers (capacity utilization, raw materials requirements, plans for expansion, production costs, distribution systems and margins).

5. Survey of existing studies which will be photocopied and put in lockable bookshelves.

Other studies which are to be undertaken which will provide pertinent information for the NICU database of information includes costs and returns to various methods and types of power and tools for land tillage and other cropping operations, e.g. mechanical versus hand seeding, and the costs and returns of using different types, levels and methods of application of agricultural chemicals alone and chemicals as a part of integrated pest management systems, various fertilizers, limestone, etc. Data collected from these studies will be instrumental in building the NICU databases of information.

Data entry requirements for the NICU MIS will be substantial. Once the dBase IV programs are designed specific staff and computer hardware should be dedicated to the building of the databases of information.

Recent questionnaires to have been or will be sent to collect primary data concerning the following:

1. Local Producers of Agric. Inputs (Manufacturing and Hatchery)
2. Agricultural Inputs Supply
3. Cooperative and Private Farm Supply Shops

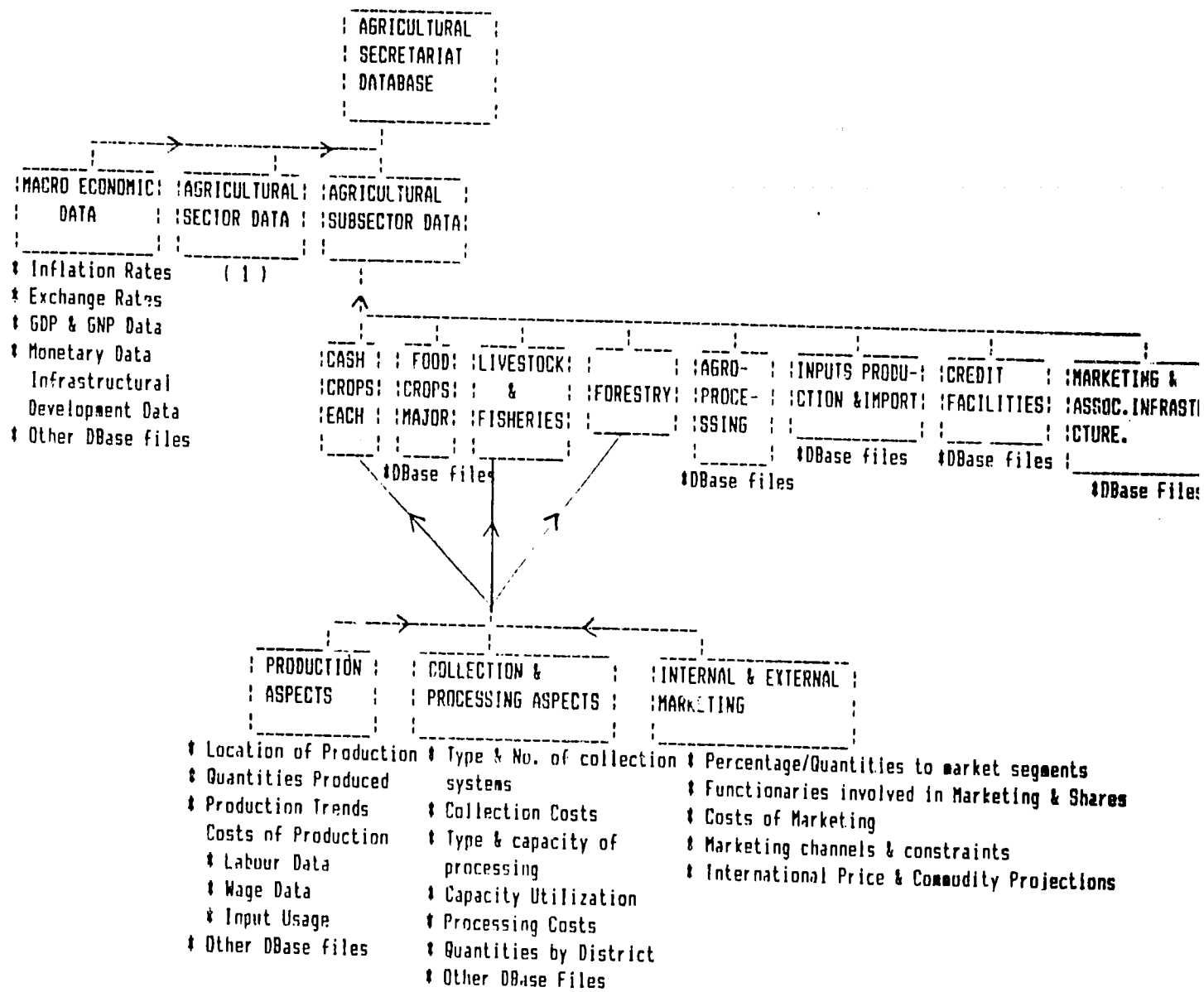
4. Agricultural Inputs Usage at the Farm Level
5. Farm Gate Prices
6. Cost of Production
7. Livestock Products

Other data to build the NICU database is collected from secondary sources. See the following graph for a representation of the way information flows into the NICU database.

It should however be stressed that narrative information which does not require special data manipulation should be maintained on the computer utilizing word processing software, not some other more sophisticated software package that is more difficult to learn and use. If there is no advantage to having the narrative information stored on the computer then it should be maintained in typed form, not computerized, as computer time is more precious than to be used for simply retyping reports that are already available in typed form. If the decision is made to not computerize reports that already exist, then the importance of a well indexed list of reports available and their contents, as mentioned in the Executive Summary and depicted in Appendix G, is maximized.

Refer to the chart below which is a graphic presentation of what databases should be built, what information should be available within each, and how information flows from and into other software packages. Modifications and additions will be made to the design as it is built, but this graph will at least present a skeletal design for the management information system necessary to meet the needs of the NICU.

AGRICULTURAL SECRETARIAT



SOURCES OF INFORMATION:

Agricultural Secretariat Studies
Feasibility & Sector Studies
Library
Field & Other Surveys

- Individual DBase IV Data Files

(1)
- Contribution to GDP and Government revenue
- Contribution to foreign exchange earnings
- Overall growth rates
- Employment in (non) monetary sectors data
- Structure of Agriculture
- Budgetary allocations
- Export taxes
- Other DBase files

NOTE:

All databases above provide information extracted into VP-Planner Plus spreadsheets for further analysis and into word processing for maintenance and report generation.

Computer Hardware/Software Recommendations

Computer hardware needs for the NICU in the short term (4 months) are defined as follows:

2 - IBM compatible computers with minimum 40MB hard disk, 640K RAM, monochrome monitor, Hercules graphics card, 1 360K 5.25" floppy drive, 1 720K 3.5" floppy drive, enhanced IBM keyboard
1 - Wide carriage dot matrix 9-pin printer
1 - Wide carriage dot matrix 24-pin printer
2 - Uninterruptible power supplies (240V in/out) with built-in surge protection
Miscellaneous supplies, i.e. printer ribbons, wide and narrow paper, 5.25" and 3.5" diskettes, diskette holders

Additional computer system requirements will exist within the NICU in the near future. The items listed above should represent the minimum hardware available to only the NICU, and at all times. The Agricultural Secretariat's computer needs are much greater.

One of the above computers will likely be dedicated to word processing for daily activity and data entry necessary to build and maintain databases. Initially the data entry requirements will be and someone must be made responsible for data entry. If a staff person has been assigned to do the word processing for the organization and the time requirements are not too substantial, then it could be possible to assign that same person the responsibility of data entry.

The other computer should be available to the professional staff so they can develop spreadsheets, modify dBase reporting when necessary, perform statistical analysis, etc. The computers will initially be used very heavily as training tools, a necessary phase in any new computer development.

As computer applications are built and usage increases, a dependency on the computer and the information it contains will develop, at which time it will be necessary to consider the purchase of another system. This will likely occur in 4-8 months. This is particularly expected with the NICU as it develops and expands, which is in the organization's plan.

The immediate software needs of the NICU are listed below:

MS-DOS, version 3.2 or 3.3
WordPerfect word processing, version 5.0
Wordstar word processing, version 5.0
dBase IV database management
VP-Planner Plus, spreadsheet/database management

Both WordPerfect and Wordstar word processing packages are suggested because many files and information currently available already exist in Wordstar format; a move is underway to make WordPerfect the standardized word processing package. Special software needs for the NICU include the ability to perform linear programming, regression analysis, econometrics, and cost/benefit analysis. Although sophis-

ticated analyses is not being done at the current time, it will in the future should the capability to do more complicated analyses exist. That capability is possible with such a wide array of softwaro applications available for purchase. An inexpensive package suggested to meet these needs is Nuametrics Econometric Analysis from Dynacomp, Inc., in Webster, N. Y. The package provides statistical methods for econometric analysis and costs $195. However, most of the analytical work that needs to be done will be possible with the VP-Planner Plus software, which is virtually the same as the Lotus 1-2-3 spreadsheet with added database capabilities.

The ability to exchange data between dBase IV and spreadsheet packages, such as VP-Planner Plus, will be very useful and necessary to NICU. Although dBase IV is a capable database manager, it is not the best tool for every job. For example, calculation intensive tasks are better left to spreadsheet programs and statistics packages.

Computer Training Recommendations

Some NICU staff has had computer training. In particular, the agricultural economist has had training in many different software application packages including WordPerfect word processing, dBase III+ database management, Supercalc 4 spreadsheet, Lotus 1-2-3 spreadsheet, Symphony integrated software, SNAP survey analysis, U-SP survey, SPSS/PC statistical, graphics and linear programming/multiple regression. However, the total three months of training for all of the above listed subjects over one and one-half years ago and the student has subsequently had very limited access to a computer. Currently there are three staff members undergoing computer training.

A CAAS consultancy completed just after the initiation of this MIS consultancy resulted in recommended computer training; specifically a class titled "Micro Computer Applications in Agricultural Development" (Oklahoma State University) from June 25 - August 4, 1989, was suggested for a senior staff member of NICU. Within CAAS a total of $50,000 is budgeted for all Agricultural Secretariat training, of which NICU and computer training is only a part.

It is possible to contract for local training from two organizations, including Rank Consultants and the Uganda Cooperative Alliance, Business Services Limited. Rates range from 1,500/= - 10,000/= per hour for on-site training in a variety of subjects and allow up to five students per class. UCA/BSL's training should be utilized whenever possible as it is more economical than Rank Consultants and UCA's understanding of cooperatives is much greater. It is the consultant's understanding that the CAAS budget includes shillings for local training and it is recommended that this be used to the maximum amount possible. Training should be focused on Lotus 1-2-3 (spreadsheet), WordPerfect (word processing), and dBase IV (database management). A limited number of personnel (two or three) should be trained in DOS (disk operating system) and general system administration of the computer system. UCA/BSL should be utilized

whenever possible as the rates are more competitive and their understanding of cooperatives is far greater than Rank Consults.

It should be understood that little computer development will occur durin, this training period as it is a necessary prerequisite to development. Futhermore, computer equipment for training must be made available by the organization being trained, rendering it unavailable for other purposes.

It is recommended that the CAAS Project provide a highly qualified dBase/spreadsheet programmer to the NICU for a period of three months in the very near future. This will help them to accomplish development of many programs necessary for the MIS, and will ensure that their initial development is undertaken systematically. The programmer can provide much needed advice to the newly computer trained staff.

In the case of NICU, where databases will represent a large part of the MIS, it is preferable to designate one of the DOS trained personnel to act as the Data Base Administrator (DBA), responsible for implementing, maintaining, controlling, and making available the organization's database. The DBA can interact with both the user and the "programmers" or "analysts" to define data needs, and to assume overall responsibility for the computer system, also acting as a Computer Systems Administrator (CSA). In such a small organization as NICU it would be more practical to have the DBA and CSA as one person, although those responsibilities are normally separated in larger organizations.

Long Term MIS Recommendations

Training is the key to a continuously developing MIS. Application software is readily available to meet virtually every need that the NICU has and will have. However, much of the work that exists or is expected can be derived from a database of information. This information will be maintained in dBase IV databases that can be related to each other. dBase IV can be used to create data entry screens for input of the data, storage and retrieval of data, and customized reporting which sorts and lists the data in whatever method desired. It will be necessary for NICU staff to develop their own computer skills internally to support themselves in future development of additional databases and in the creation and modification of reporting from the databases.

The long term approach for an institution that requires the storage and use of a large amount of data, is to be self-supporting in utilizing the best software packages available and training their staff on the use of that software. No one is more qualified than current staff to identify the application of software packages available to them to their individual work objectives, and this can only be accomplished if the staff is well trained in the software packages available to them.

As discussed in the Executive Summary, the very long term objective

of the MIS should be to provide information to, and collect information from an agricultural database, managed by a central organization and controlled by a committee consisting of members from the organizations using the database. The existing computer hardware environment, i.e. computer availability and staff capabilities and lack of communication and information transfer among the organizations involved, prevents such an agricultural database from being created in the near future. Nevertheless it should be the ultimate objective of all the organizations studied within the Cooperative Movement to access the same information from such a single source.

ASSESSMENT/RECOMMENDATIONS

Ministry of Cooperatives and Marketing

Marketing Department

Mission Statement Summary

The Ministry of Cooperatives and Marketing - Marketing Department is one of two departments within the MCM. The major objectives of the department are to ensure that the structure of agricultural marketing in Uganda is beneficial to the nation's farmers, commercialize and diversify agricultural production by increasing the access of farmers to domestic, regional, and international markets, provide marketing extension services to farmers, cooperatives, and other marketing agencies, promote adequate food supply for both local and export markets, promote efficiency in marketing chains of various crops from the farmer right to the final consumer, and ensure the coffee, lint, and produce marketing boards fulfill their functions and adhere to operating regulations.

Staff Comments

The Marketing Department is divided into three specialized divisions, the operations division, the commodity analysis division, and the statistics division. There is a total of about 40 professional staff members and they are trained in the areas of agriculture, economics, accounts, statistics, planning, management, marketing, etc.

The operations division handles administrative matters, such as supervision of the marketing boards and other agencies, issuance of crop buying and processing licenses, and enforcement of marketing legislations.

The commodity analysis division is responsible for analyzing (for various crops) the marketing policies and practices as they affect production, income and consumption. Decisions on day-to-day operations are based on this commodity analysis.

The statistics division is responsible for collecting, analyzing, storing, and disseminating market information such as price levels, supply, demand, marketing costs, etc.

Computer Capabilities

Computer hardware and software is needed; the CAAS Project has one computer system designated to go to the department.

There is little or no computer trained personnel and the simplest form of a management information system will be necessary initially. Computer training should be emphasized for the first several months, concentrating on spreadsheets and database management, rather than

word processing which has occurred in so many other organizations which have received computers recently.

Major Constraints

Again data collection is listed as the worst constraint to developing reports with meaningful information. Much data is either unavailable, incorrect, or untimely.

Data flow is a definite problem; there is no set method as to how data should flow from the field to the appropriate divisions of the Marketing Department, e.g. there is no defined reporting line to the statistics and research division. Interdepartmental and inter-agency reporting is almost nonexistent. Monthly reports from regional marketing officers are not submitted on time and the data required from them is not standardized. License application information is difficult to obtain. Applications are filed and further accumulation or analysis of information is collected. A CAAS consultant will be responsible for analyzing and making recommendations on how to solve the communication and information flow problems.

Some of the reasons for data collection reach beyond the policy area, i.e. the department finds itself immobilized due to lack of transport and funds to provide transport. As of late only 20,000/= shillings have been allocated to each region for these transport expenses.

Recent experience has shown that once people are trained they do not remain with the organization due to low salaries. This will become an even greater problem as staff members are trained with specific computer skills which are in high demand.

Reports/MIS Design

Major management information needs identified by the department's management and staff includes:

1. Licensing information - For coffee licenses and produce licenses specific information needs to be collected regarding licenses relating to processing, factories, and buying. Information to be collected for these areas includes type of license, name of holder, number of licenses, location (sub-county, county), district or region), license file number, CMB A/C number, license fee paid, income tax paid, production, number of hullers, power source, etc. This can be either a database or spreadsheet application.

2. Market Surveys - Average monthly wholesale crop prices for ten regions. This is a spreadsheet application, with linking (consolidation of spreadsheets).

3. World market prices of exported crops, weekly and monthly. This is a spreadsheet application.

4. Storage Project (storage facilities in Uganda) - Information includes society, total number of stores, store number, size, calculated volume, capacity, calculated capacity, age, roof frame, roof cover, wall frame, wall cover, foundation, floor, rehabilitation, and purchases. This is a spreadsheet application with possibilities for additional analysis through database software.

5. Internal budget compiling annual departmental financial estimates based on current economic situation. This is a spreadsheet application.

6. Compilation of weekly coffee statistics from private processors. This is a spreadsheet application.

7. Marketing board information, including weekly/monthly coffee, cotton, and crop purchases and weekly/monthly coffee, cotton, and crop produce exports and revenue plus related data on stocks at major depots. This should be maintained in a database management software that can be exported to spreadsheet software, e.g. VP-Planner or dBase IV/Lotus 1-2-3.

8. Staff list including including information on management vs. support, date of appointment, birth date, qualifications, promotions, years of service, salary scales, and curriculum vitaes, if practical. This is a database application. Information such as curriculum vitaes, which can be maintained more practically in written format should not be computerized as it is wasted effort.

9. Quarterly reports. This is a simple word processing application. However, data within the report can be imported from individual spreadsheets.

10. Local prices of cash crops. This is a spreadsheet application.

Primary sources of information are listed below:

1. Regional marketing offices (ten)
2. Departmental divisions - Commodity Analysis, Licensing and Field Operations, Statistics and Research
3. Ministry headquarters (Revenue Office)
4. Coffee and produce private processors
5. Marketing boards - CMB, LMB, PMB
6. Cooperative societies and unions

Secondary sources of information are listed below:

1. Regional Marketing Offices (ten)
2. Departmental divisions as listed above
3. Marketing boards as listed above
4. Cooperative Development Department
5. Cooperative unions and societies
6. Agricultural Secretariat
7. Parastatal bodies, e.g. Uganda Tea Authority, British American Tobacco Company

Whenever possible the Marketing Department should work closely with the source providing the information to avoid duplication of work. For example, the Agricultural Secretariat could provide information to the Marketing Department using the same spreadsheet package as that desired by the Marketing Department. Standardization in software packages is the key, along with the recommendation for a cumulative list of reports and information as discussed in the Executive Summary.

Periodic reports for the Marketing Department include monthly, quarterly, and annual departmental reports. Information included in those reports and the associated source is shown below:

1. Marketing activities (narrative)
   Source: Regional Marketing Office monthly reports
2. Revenue collection and number of licensed produce buyers and processors
   Source: RMO monthly reports
3. Wholesale average market prices of food crops
   Source: RMO monthly reports
4. Revenue collection and number of licensed coffee buyers and processors
   Source: Ministry headquarters - Revenue Office
5. Field activities (narrative)
   Source: RMO monthly reports

Marketing boards (CMB, LMB, and PMB) should provide information to the Marketing Department. Information provided by the CMB is shown below:

1. Coffee from Kampala and Mbale.
2. Coffee stocks available at Kampala, Mbale, Mombasa and Dar-es-Salaam, including coffee in transit.
3. Projected coffee shipments, actual shipments, and balance to be shipped.
4. Purchases of coffee by CMB and the world price.

Information provided by the LMB includes cotton ginning and marketing operations including, union purchases, ginned and unginned stocks, bales stacked at ginneries, bales burnt or stolen, and external and internal cotton sales.

Departmental monthly and quarterly reports are prepared for the Permanent Secretary, Ministry of Cooperatives and Marketing, who in turn compiles a Ministerial monthly and quarterly report, which are sent to the Prime Minister's office. The purpose of the reports is to reflect the marketing activities carried out in the ten regions during the month and the quarter.

Most of the monthly or quarterly reports should be done in word processing with appropriate spreadsheets imported into them. Creation of those reports should require much less effort with the ability to import the spreadsheets into the report which is prepared in word processing.

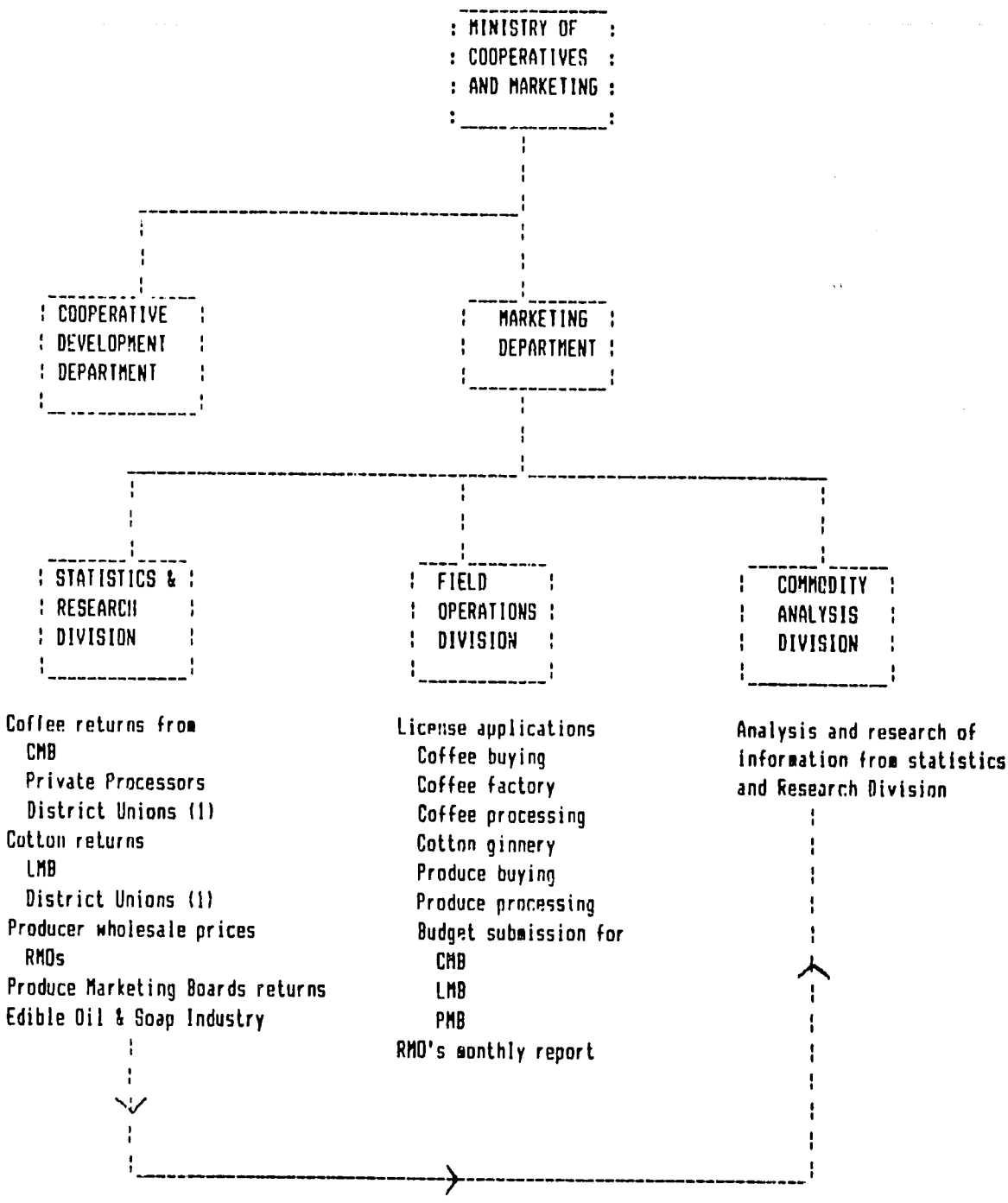
Statistical financial budget analysis is prepared for the three marketing boards. This is a definite spreadsheet application, with linking.

Spreadsheet packages such as Lotus 1-2-3 will provide the capability to do trend analysis, percentages, and comparative analysis.

License application information collected by the field operations division should be put in dBase IV format. The database will be quite large and sorting and analysis of the application information can be performed through dBase IV and exported spreadsheets.

A chart depicting the information (data) flow follows on the next page.

MINISTRY OF COOPERATIVES AND MARKETING
MARKETING DEPARTMENT



(1) Obtained from Cooperative Development Department, Development Section.

The following reports are not currently prepared but could be in the future:

1. Crops bought and processed by each licensee, monthly.
2. Periodically updated list of crop buyers and processors.
3. Crop production, by each crop.
4. Domestic consumption and surplus for market sales.
5. Crop trades by licensed businessmen.
6. Crop production projections.

Most of the above are spreadsheet applications. Some information to produce the reports is difficult to obtain, but if made available would provide useful management information, and be easily maintained and updated in a Lotus 1-2-3 or VP-Planner spreadsheet.

Computer Hardware/Software Recommendations

The CAAS Project is scheduled to provide one computer to the Marketing Department. That computer should be located in the statistics and research division, where most of the data collection and analysis will occur. The computer hardware configuration should look as follows:

1 - IBM compatible computer with minimum 40 MB hard disk, 640K RAM, monochrome monitor, Hercules graphics card, 1 360K 5.25" floppy drive, 1 720K 3.5" floppy drive, enhanced IBM keyboard
1 - Wide carriage dot matrix 24-pin printer
1 - Uninterruptible power supply (240V in/out) with built-in surge protection
Miscellaneous supplies, i.e. printer ribbons, wide and narrow paper, 5.25" and 3.5" diskettes, diskette holders

Computer software required to perform the above programming is listed below:

MS-DOS, version 3.2 or 3.3
WordPerfect word processing, version 5.0
Wordstar word processing, version 5.0
dBase IV database management
VP-Planner Plus spreadsheet/database management
Lotus 1-2-3 spreadsheet
Sidekick, version 1.56B, includes note pad, calculator, appointment book, calendar, and phone book

It was noted that one of the major needs of the Marketing Department was office equipment, i.e. calculators. It is possible to provide limited calculator capabilities within the computer system by using the Sidekick software mentioned above; it may reside in memory on the computer. It is produced by Borland International at a cost of $85. and is already installed on several computers within the CAAS Project.

As mentioned in the NICU computer hardware/software recommendation section, the ability to exchange data/information among a database

manager, spreadsheet, and word processing package is important to provide consistency in data and in avoiding duplication of work. The above recommended software provides that capability.

Computer Training Recommendations

The CAAS Project provides $90,000 for all training in the MCM (including this department) during the life of the project. As noted in the NICU recommendations, it is suggested that the local shilling budget be used to the maximum for computer training at a cost of 1,500-10,000/= per hour, utilizing UCA whenever possible.

Considering that at least in the short term there will be only one computer system available to the department, and that it will likely be located in the statistics and research division, it would be advisable to provide complete systems administrator training, with a minimum of DOS training, to an analyst in that division. This person would assume responsibility for the computer system and its operation and would be designated as the Computer Systems Administrator (CSA).

A minimum of one person in each of the three divisions of the department should be trained in word processing, spreadsheet, database management.

Again training is the key to an effective and responsive system. Spreadsheet and database management training should be the emphasis in the case of the Marketing Department of the MCM.

Long Term MIS Recommendations

After the computer system is installed, training occurs, and development is underway, one system will not be adequate to meet the ever growing needs of the department. Additional applications will be identified by the users, e.g. econometric and statistical analysis. When this occurs another system will need to be purchased and additional software will need to be evaluated. Specifically, for the purposes of econometrics and statistics, the packages under consideration by the NICU of the Agricultural Secretariat should be evaluated. See the "Computer Hardware/Software Recommendations" in the NICU section of this report for details on these software packages.

Ideally, after initial training and software development occurs, each of the three divisions should have their own computer system. The statistics and research division will collect large amounts of information and should work closely with the commodity analysis division to prepare information in the appropriate format, developing a large number of spreadsheets. The field and operations division requires a computer to maintain license application information and subsequent quantitative analysis.

The UCA - Business Services, Ltd. subsidiary should be utilized

whenever possible for the creation of computer programs to support the MIS.

ASSESSMENT/RECOMMENDATIONS

Ministry of Cooperatives and Marketing

Cooperative Development Department

Mission Statement Summary

The Cooperative Development Department is one of two departments which makes up the Ministry of Cooperatives and Marketing. The overall purpose of the department is to help form viable cooperative societies, and then guide and advise them and district unions in their operations so that they can eventually become sound business enterprises.

Staff Comments

There are approximately 1,300 employees in the departments six sections (plus the Registration Office) in 33 districts within ten regions.

The six sections of the department are listed below:

1. Management and Development
2. Education and Training
3. Savings and Credit
4. Extension and Inspectorate
5. Audit
6. Projects

Computer Capabilities

One computer system is to be provided to the Cooperative Development Department through the CAAS Project, not nearly enough with such an extensive list of information needs but nevertheless more than what they currently have, more than they are currently capable of handling, and a beginning to computerization.

Staff computer capabilities are minimal due to limited access to computers. The department staff frequently finds themselves using computers that belong to other departments or projects which are not currently being used. Continuity in computer training is almost impossible due to the interrupted and limited access to the computer systems.

Major Constraints

Since most information that the department utilizes comes from regular reports sent from the field, it is imperative that these reports be sent timely and be complete and accurate. This has not

been the case in the past. Although reports are required on a weekly, monthly, and quarterly basis, they have either not been submitted at all or not on time. Standardization of information is also necessary in order to effectively collect management information.

Lack of information was a common constraint to the effectiveness of a management information system, no matter what the section under study. The necessary information required to build an effective management information system does not now exist, but with the necessary information flow, a useful and effective system is possible.

Reports/MIS Design

Much of the information that comes to the sections is to be sent from the field offices in the form of regular reports. Each section and it's management information needs are discussed below:

Management and Development Section

Manual reporting requirements are listed below:

Monthly Reports
1. Regional cooperative officers
2. District cooperative officers
3. District unions
4. National unions
5. Coffee and cotton sales/purchases, with stocks
6. Trial balances and/or balance sheets from unions

Quarterly/Other Reports
1. Situational reports
2. Crop finance from the banks
3. Committee members (district and national unions) curriculum vitae
4. Annual reports from district cooperative officers and unions
5. Union employee's salary structure
6. Rehabilitation requirements for unions
7. List of unions, their accounts and financing institutions
8. Number of registered vehicles per union
9. Produce handled by unions
10. Returns of tobacco, savings and credit, fishing, and handicraft unions
11. Staff's schedule of duties

Many of the above reports are used to monitor the performance in the districts. There is a management desire to quantify the selection process of non-registered groups to new societies and the scheduling of management visits due to observed operational problems or a negative trend, e.g. production numbers. In order to do this the computer program, suggested in spreadsheet format, must work with quantifiable information, i.e. numbers. Ranking must be assigned to the operational areas deemed important by department management, and all information regarding the societies monetary activities be col-

lected before such analysis and ranking can occur.

The database of information collected from the societies will be very large; there are about 4,800 societies in existence and about ten new ones are added each year. Data entry requirements will initially be significant and later will be basically limited to entry of updated or current data. The spreadsheet discussed in the paragraph above can be developed using the information from a dBase IV database.

The list of unions should have data elements including the name of union, registration number, date of registration, area of operation, and number of societies within that union. This information would logically be information consolidated from the society database.

Curriculum vitae information is collected in order to assess the training needs of the committee members. Some work has already been done in dBase and it should be evaluated and modified. There has also been some dBase work done concerning qualifications of the top management in the unions. The data elements include union name, employee name, title, birth date, educational background, extra coursework, present salary and grade, other benefits, date of appointment, nature of duties, other posts held, union grade, comments.

Sales/purchases information for coffee and cotton is collected to assist the banks in monitoring of crop finance, which allows the unions to monitor production, to provide the Lint Marketing Board and Coffee Marketing Board with sales information, to provide the government with crop finance information, and to provide the department itself with performance information. Some work has already been done in Lotus 1-2-3, to track the coffee/cotton marketing operations. However, it is done only through June, 1988, and needs to be evaluated, modified, and updated. Spreadsheets also need to be developed to consolidate crop finance projection information from the unions.

The Uganda Cooperative Alliance (UCA)-Business Services Ltd. is working to assist unions and societies to install computerized accounting and management systems. The UCA's efforts in providing balance sheet information, which is a part of the overall accounting computerization, should be continued and fully supported by CAAS Project efforts. In other words, UCA's efforts in providing general ledger information should be adequate to meet the needs of the Management and Development section once the development is completed.

It would be useless to regenerate the narrative monthly reports in word processing on the computer, providing nothing more than the same written information only printed from the computer. What is needed is the extraction of quantitative information from the reports, and spreadsheets developed to assist in the consolidation and analysis of the information.

A software development priority is the creation of crop finance spreadsheets depicting sales/purchases of cotton and coffee. The

report should include the amount of money issued by the banks to the unions, and a detailed, comparative analysis of the use of such funds in purchasing crops. Spreadsheet information for specific unions could be linked together to provide a consolidated spreadsheet.

With such a large number of organizations generating and providing information to the department, and such a major constraint which exists with the collection of information, an incomplete and inaccurate database of information can be expected.

A computerized union classification system is needed by the department. Although minimal, some work has been done on the development of such a system to classify the performance of unions. VP-Planner spreadsheet software has been used to calculate a performance analysis of unions.

Union grading is accomplished by the assigning points based on certain criteria, such as turnover, position of accounts, efficiency of meetings, reporting profitability and solvency, repayments of crop finance, capitalization, promotion, and diversification. The current work done on the computer needs to be continued in the same manner, utilizing VP-Planner or Lotus 1-2-3 software.

Education and Training Section

As defined by the section personnel, Education and Training is responsible for providing for and making available to the human resources of the Department of Cooperative Development, and placing or counselling the same, a planned, prepared and coordinated programmed course, curriculum subject system or routine instruction in professional, technical, clerical, administrative and other fields which are or will be directly related to the performance of defined official duties of the employees to increase their knowledge, proficiency, ability and skills in the performance of their duties.

In meeting this objective a large amount of information regarding training is kept by manual methods within the section. In 1983, over 2,000 people were trained. Computerizing this information would assist section staff in the selection of personnel for training, scheduling courses, and review of progress in achieving objectives.

The most practical application for maintenance of such information is by the use of a database management program such as dBase IV. Several types of training information must be segregated in order to provide for individual and consolidated reporting regarding training. The dBase IV program allows for relational databases assisting in the consolidated reporting necessary for the section's activities. Separate data files may be related, or linked, if they contain information common to both. This is the case with training information.

Reports should be designed to provide section staff with information

concerning the five different types of training, which are general membership, staff, college, overseas training, and the Women's Cooperative Activities Program (WOCAP).

Useful data within the dBase program should include, student's name, course name, dates, subject, objectives, costs, total number of students, target groups, course evaluation, etc. This information can be used to identify what students have been trained, in what areas and what the additional needs are, needs for changing the course content, individual and consolidated reporting concerning total training activities by date, course type, location, etc. A general overall monitoring of the training activities will be possible with such a database management program.

Primary information regarding general membership training is very sparse; only five of 33 unions have sent the required reports to the Education and Training section. Staff and overseas training (departmental civil servants, Movement employees) information, involving over 1,500 department people and over 5,000 movement people per year, is however very complete and effective reports can be generated immediately. Overseas training is very small in number with only about 20 students per year, and information is available to build the database. College training involves specialized courses for about 200 employees per year; information is also available for that area.

There are fourteen training wings in the country and information needed to be kept on the computer includes what training and office supplies, and facilities exist at each of the locations at any time. This would help in planning for training activities.

Savings and Credit Section

This section of the department is associated with the Uganda Credit and Savings Cooperative Union (UCSCU) to assist in coordinating and supervising the extension of credit for about 407 savings and credit societies.

Information is to be collected, usually monthly and often in person from organizations such as the ten regional offices, 34 district offices, the UCSCU, the Cooperative Bank, and Uganda Cooperative Insurance Ltd. Currently only about 50% of the reports required are being submitted and a good portion of those are very late.

Objectives for collecting the information include the analysis and approval of maximum liability for the national and district unions and societies. This should be set up as a spreadsheet imported from a dBase IV program which needs to be programmed to maintain the entire database of information. The spreadsheet could be used to do additional analysis of the information in the database.

Other information which should be included in the database includes a record of repayment from societies to district unions and the bank, including principal, interest and the balance, and reports

from credit and savings unions which monitor changes in their shares, deposits, loans advanced to members, participation in union programs, and growth and movement of members.

A Rural Savings Scheme (RSS) database needs to be set up which identifies and maintains information on membership, deposits/withdrawals of each society, and balances, all on a monthly basis. However, currently the RSS is in a dormant state and the database development should not be a priority.

Also, a database on the Cooperative Credit Scheme (CCS) through the Cooperative Bank, which currently has 88 societies active, needs to be developed and necessary programming done to accomplish reporting. Output should include total membership by society, amount of credit applied for, and monetary information relating the union, bank, government funds, and the own contribution.

Currently, there is no manual information collected by the section regarding disbursements from the bank to societies and unions, and subsequent utilization of the money. It is however a desire of the section to maintain such reporting. First, collection of the necessary primary information from the banks must be established before such reporting is possible.

Extension and Inspectorate Section

Periodic information received by this section includes district, regional, and sectional monthly reports, as well as quarterly and annual reports. Most of the reporting is in narrative format although some quantitative information is included.

Information needs of the organization are mostly in time scheduling and planning. Scheduling needs are in the areas of a yearly calendar of activities for each section, a yearly schedule of staff meetings and report submissions, reading file schedule, and schedule of monthly report submissions. Although many time management software packages are available for purchase (Quick Schedule Plus, Tymaster, Knock-Out), it is suggested that the schedules identified above be prepared in spreadsheet software in order to avoid additional installation and training of software. The VP-Planner and Lotus 1-2-3 spreadsheet software packages are both well suited to development of the simple spreadsheets listed above.

The section's management also felt it would be beneficial to have approximately fifty schedules of duties computerized. The consultant sees no direct advantage to computerizing these narrative reports unless it is felt that the schedules are to be modified often. If so, word processing would provide the necessary capabilities to saving time in such modifications.

Additionally, section management would like to have a staff list for about 1,300 employees prepared which would maintain such information as name, title, date of appointment, birth date, etc. This is a dBase IV application and the work done for such an employee list as

is required by the Development and Management section (as discussed above) would be an appropriate model for the computer programmer to work by.

Audit Section

The role of the Audit section is not well defined. It is possible to assist in the audit function with computer software, and that schedules can be prepared to assist in the auditor's duties. The biggest problem with computerizing the audit function is that audit reports are not always submitted on time, and therefore no information is available to analyze. However, recently much improvement has recently been noted in the submission of audit reports.

There are currently plans for UCA to establish a subsidiary audit company to provide auditing services to the Cooperative Movement. This company should work very closely with UCA-Business Services Ltd. in their work computerizing accounting.

Computerization of auditing should be undertaken as soon as possible. It can be pursued with the use of spreadsheets and through the thorough the use of audit program generators, such as available with the Hogia system. Special effort must be taken to ensure the timely submission of audit reports. Once audit reports are available for analysis, spreadsheets can be developed to compare standards (which need to be set) with actual results and the audit program generator implemented.

Immediately, a spreadsheet program should be developed to track what audit reports have been submitted and when, as well as other pertinent information relating to the submission of audits.

Projects Section

Management information needs of the Aids and Projects office are related to activities of the various projects. Currently, management requests information from each project and it is prepared on a customized basis. There does appear to be some communication problems between the Aids and Project Office and the individual projects, concerning what information is needed by the section, i.e. financial statements which detail expenditures of each of the projects.

Another specific need of the organization is vehicle usage, with an analysis of distance and places travelled, fuel consumed, and fuel expenditures.

Management also felt it would be helpful to have computerized project management software. It is suggested that although it may be helpful to them in evaluating project progress and evaluation, that it should be considered a long term objective to install and use such project management software as Harvard Total Project Management or Time Line. See the Planning Unit section of this report

for a related need for such software.

The current needs and computer capabilities of the staff are more attuned to a simple spreadsheet which depicts each project, the status, and other pertinent information relating to the project's progress.

Registration Office

A database was defined early in the consultancy and UCA-Business Services Ltd. was employed to do the necessary programming in dBase IV. Programming was near completion at the writing of this report. Data elements included in the database were identified as constant and variable information, as shown below:

Constant Information

1. Name
2. County
3. Sub-county
4. Parish
5. Registration number
6. Date of registration
7. Postal address
8. Type of business

Variable Information

1. Names of officials
2. Level of education of officials
3. Age of officials
4. Union affiliation
5. Date of last annual general meeting
6. Date of last balance sheet
7. Date of fiscal year-end
8. Maximum liability approved at annual general meeting
9. Total membership
10. Women membership
11. Name of secretary/manager
12. Training of secretary/manager
13. Annual turnover
14. Previous year and current volume of commodities bought
15. Member's deposits
16. Loans to members
17. Share capital
18. Fixed assets
19. Total assets
20. Long-term liabilities
21. Total liabilities

A dBase IV program was developed to contain all above information regarding the societies. A data entry screen was designed to provide the new data entry operator with ease of data input. User instructions were prepared to direct the user on how to print

pre-designed reports, as well as create new reports and inquire into the database, searching, sorting, and listing information meeting specific criteria. There will also be provisions for retrieving historical information, up to five years ago. Briefly, the dBase IV program will contain all the information currently kept manually by the Registration Office while concurrently allowing for the manipulation of information into smaller databases, or for consolidated reporting.

Computer Hardware/Software Recommendations

The CAAS Project budget calls for one computer system with the following configuration:

IBM compatible computer with minimum 40 MB hard disk, 640K RAM, monochrome monitor, Hercules graphics card, 1 360K 5.25" floppy drive, 1 720K 3.5" floppy drive, enhanced IBM keyboard

Wide carriage dot matrix 24-pin printer

Uninterruptible power supply (240V in/out) with built-in surge protection

Miscellaneous supplies, i.e. printer ribbons, wide and narrow paper, 5.25" and 3.5" diskettes, diskette holders

Due to the large number of sections and the diverse needs of the organizations, together with initial training requirements, several computers will be needed in the near future. It is recommended that the first computer system go to the Management and Development section and additional systems with the same configuration go to each of the following sections:

1 - Education and Training/Extension and Inspectorate/Aids and Projects
1 - Registration Office/Audit
1 - Management and Development (additional to the system above)

Computer software required and suggested for the office is listed below:

MS-DOS, version 3.2 or 3.3
WordPerfect word processing, version 5.0
Wordstar word processing, version 5.0
dBase IV database management
VP-Planner Plus spreadsheet/database management
Lotus 1-2-3 spreadsheet
Quick Schedule Plus, Tymaster, or Knock-Out time management

Long-term - Project management software (Harvard Total Project Manager, or Time Line)

Computer Training Recommendations

The CAAS Project provides $90,000 for all training in the MCM (including this department) during the life of the project. Again, as noted in the NICU recommendations, it is suggested that the local shilling budget be used to the maximum for computer training at a cost of 1,500-10,000/= per hour, utilizing UCA whenever possible.

Computer training required for such a large number of people in so many sections is extensive. There will need to be, of course, the necessary word processing training for many secretaries. Analysts should be trained in the use of spreadsheet software, which will eventually provide the section staff with the capability to create their own spreadsheet software, not relying on outside consultants or the UCA. However, initially while training is underway, it will be necessary for spreadsheets, and particularly database programs to be developed by UCA. At the beginning of the project the UCA - Business Services, Ltd. subsidiary should be utilized to develop computer programs to support the MIS.

A Data Base Administrator (DBA) is not necessary in any of the sections as the databases will be smaller, less complex and not created with a specialist's assistance as is required by the NICU (see above). It will be necessary to designate a Computer Systems Administrator (CSA) to be responsible for each of the computer systems as noted above. See a description of the CSA's duties in the NICU section of this report.

Long Term MIS Recommendations

In the long term it is suggested that the organization use a train-the-trainer approach to spreading computer skills throughout the organization. Little emphasis should be placed on word processing with much emphasis placed on spreadsheet applications, DOS and other general computer training for the CSAs.

Internal development of programs is some time away and networking possibilities should not even be a future consideration because of the number and type of constraints affecting computerization.

ASSESSMENT/RECOMMENDATIONS

Ministry of Cooperatives and Marketing

Planning Unit

Mission Statement Summary

The Planning Unit of the MCM is created to support the Cooperative Development and Marketing Departments by helping to assess the costs and benefits of alternative policies and programs. This is done by undertaking project feasibility studies, and by evaluating the performance of national programs and projects managed by the MCM.

Staff Comments

The unit consists of two sections, the Project Planning and Economic Analysis section and the Research and Statistics section. The organization is small with only five people, and has few resources to work with.

The Project Planning and Economic Analysis section does research and design activities for identified and approved national development projects and economic activities proposed by the cooperative movement and parastatal bodies. They also conduct preliminary economic appraisals of proposed development project designs, conduct financial feasibility analysis on economic activities being proposed by movement institutions, perform periodic monitoring functions on ministerial programs and development projects, and conduct evaluation exercises on national development projects being implemented through the Ministry.

The research area within the Research and Statistics section researches and evaluates existing policies and programs in terms of short, medium and long range positive or negative effects on the sub-sector and submits consequent conclusions, recommendations and alternatives, identifies sub-sector trends and problem areas and recommends alternative strategies, actions and solutions, and conducts development planning in accordance with ministerial and national development objectives.

The statistics area within the Research and Statistics section has responsibility for maintaining a comprehensive and up-to-date computerized database. This information is to be collected from the Ministry via regular sectional/divisional reports, field reports, periodic statistical returns, special field surveys and data generated by other agencies. The statistics area is also responsible for analyzing all data input and making specific conclusions for the purpose of identifying trends, problems, weaknesses and strengths of the cooperative movement, marketing parastatals and Ministry operations.

Computer Capabilities

Several staff members have had computer training and one computer system currently exists in the unit. Staff is currently using dBase III+ software and has shown some skills in that area, although not at an advanced level. The existing computer system has hardware problems and is marginally functional, but new parts are on the way.

The Planning Unit could utilize the computer for many different tasks, as indicated by the list of responsibilities above. However, at the current time the unit appears to not be providing many of the services that they were set up to provide. Nevertheless, with appropriate training and computer equipment, and the necessary input from organizations that give them with information, progress can be made in developing a useful management information system supporting the Cooperative Development and Marketing departments.

Major Constraints

The major constraint is again lack of timely, accurate and complete information. A well designed management information system is useless without the necessary primary and secondary information. If data comes from secondary sources, i.e. within the Ministry, it is usually incomplete and unreliable. If data is to come from primary sources the appropriate budget must exist to support the collection of such information. Such a budget does not currently exist and consequently the necessary data is not collected to support an effective MIS.

More work needs to be done on collection of data that is quantifiable. Standardization and quantification of data collection should occur together with the Ministry and Planning Unit staff. Refer to the data sharing recommendation in the Executive Summary of this report for suggested methods of avoiding duplication of work and allowing for consistency in data.

Information does not currently flow into the right organizations. If it is not possible to route all reports to one centralized location for distribution, more communication should exist to identify what reports are received by what organizations, i.e. Cooperative Development Department, Marketing Department. This problem could be alleviated with the implementation of a data sharing list as noted earlier in this report.

It is also recommended that the computer committee which consists of members from the Planning Unit and other Ministry departments (Marketing, Cooperative Development) become more active, meeting on a regular basis to improve the communication problem and resolve the issue of where data should flow among the departments.

Lack of funds makes it impossible for the unit to have necessary secretarial services, equipment, and office supplies. Also field surveys are not possible due to lack of staff, transport and funds.

Reports/MIS Design

An appropriate management information system for the Planning Unit is somewhat difficult to define because it has not established a useful or active role in the cooperative area; the unit does however have a objectives as noted in the mission statement summary above. The best approach in developing a useful MIS is to work closely with the Ministry staff in sharing the necessary primary and secondary information to create their reports. Many of the information requirements identified in the organizations discussed above are the same information requirements that the Planning Unit has.

Within the monitoring and evaluation role of the Planning Unit certain management information needs can be identified; they are listed below:

1. Baseline data for targeted groups (cost, activity, products, objectives)
2. Analysis of baseline data
3. Sampling methods and statistical techniques
4. Periodic status reports on projects (projected vs. actual)
5. Special reports on problematic areas, e.g. crop finance
6. Reports with graphics depicting projects progress
7. Cost/benefit analysis
8. Trend and time series analysis
9. Growth rates
10. Regression analysis

Primary sources of information are special field surveys, field reports and investigations and interviews. Secondary sources of information include the Agricultural Secretariat, Produce Marketing Board, Lint Marketing Board, Coffee Marketing Board, district unions, railways, Uganda Central Transport Union, Uganda Cooperative Central Union, etc.

Periodic reports which identify activities performed, achievements, failures/problems and pending work are collected from quarterly work plans, ad hoc assignments, individual outputs for each assignment/responsibility and other files.

Considering that many of the current activities of the Planning Unit are in the area of project development, project analysis, or monitoring, it is suggested that a decision analysis software package be utilized, or at least tested for its applicability. At the direction of the team leader of the CAAS Project the consultant brought with him a software package titled Decision Analysis, version 5.0. The software is designed to assist in the decision making process by statistically reviewing and weighing various factors which may affect the decision making process. Sampling is a strong point of the software.

Harvard Total Project Management and Time Line project management software packages may also provide useful project evaluation,

project analysis, and feasibility analysis techniques for the Planning Unit. It is recommended that software evaluation not be undertaken until a consultant is available to evaluate the application of the software's capabilities to the needs of the Planning Unit. Harvard Total Project Management software has already been ordered and should arrive any day. Refer to the Projects section of the Cooperative Development section of the Cooperative Development Department for a discussion of project management software.

Other specific software packages which have already been ordered for the Planning Unit are Compran (project analysis), and Rats (regression analysis). Again a specialist to evaluate the software and train staff may be necessary to make it functional.

After additional definition of the task is identified, other areas that can be computerized are financial analysis of economic activities, statistical analysis, and general data storage. Spreadsheets depicting trends and comparative information can be developed, but should be done with much coordination with the Marketing Department and the Cooperative Development Department, as many of their needs are identical, due to the Planning Unit acting as a support organization for those departments. Refer to the section of this report which discusses those two departments to identify specific data requirements for the Planning Unit, i.e. refer to the Management and Development section of the Cooperative Development Department for management information requirements involving crop finance.

An exhaustive list of management information required by the Marketing Department is found in the appropriate section of this report. It is suggested that the Planning Unit staff that has been trained in the use of spreadsheet software be assigned to work with the statistical analysts in the Cooperative Development Department and the Marketing Department in order to create spreadsheets which not only report data concerning crop finance, and marketing of coffee and cotton, etc., but that those spreadsheets also identify trends and ratios, to assist Ministry staff in the decision making and problem identification functions.

A computerized list of records, reports, reference books, files, and other informational printouts needs to maintained and periodically made available to other departments of the Ministry. This can easily be done in WordPerfect, a word processing package.

Initially, the UCA - Business Services, Ltd. subsidiary should be utilized whenever to develop the necessary programs to support the MIS.

Computer Hardware/Software Recommendations

The CAAS Project budget calls for one computer system with the following configuration:

1 - IBM compatible computer with minimum 40 MB hard disk, 640K RAM,

monochrome monitor, Hercules graphics card, 1 360K 5.25" floppy drive, 1 720K 3.5" floppy drive, enhanced IBM keyboard
1 - Wide carriage dot matrix 24-pin printer
1 - Uninterruptible power supply (240V in/out) with built-in surge protection
Miscellaneous supplies, i.e. printer ribbons, wide and narrow paper, 5.25" and 3.5" diskettes, diskette holders

Computer software required and suggested for the unit is listed below:

MS-DOS, version 3.2 or 3.3
WordPerfect word processing, version 5.0
Wordstar word processing, version 5.0
dBase IV database management
VP-Planner Plus spreadsheet/database management
Lotus 1-2-3 spreadsheet
Rats regression analysis
Compran project analysis
Harvard Total Project Manager

Computer Training Recommendations

The CAAS Project provides $90,000 for all training in the MCM (including this department) during the life of the project. Again, as noted in the NICU recommendations, it is suggested that the local shilling budget be used to the maximum for computer training at a cost of 1,500-10,000/= per hour, utilizing UCA whenever possible.

The Planning Unit staff has more computer experience and training than any of the organizations studied by the consultant. It is advisable to continue training at a rapid pace, as turnover will likely occur and much advanced training is possible in the areas of dBase IV and Lotus 1-2-3 spreadsheet applications.

Again, a Computer Systems Administrator (CSA) should be designated for the computer system currently in use. This person should be the most knowledgeable about the computer system.

Long Term MIS Recommendations

The most important element of an effective on-going management information system for the Planning Unit is to solve the data flow problem. The activation of the computer committee as mentioned above can be instrumental in solving this problem.

Networking with the other departments of the Ministry that share the same information could be a possibility in the distant future but should not be considered for several years. Physical communication constraints, along with lack of computer experience and lack of an existing and effective management information system in any of the organizations make it virtually impossible at this time.

ASSESSMENT/RECOMMENDATIONS

Uganda Central Cooperative Union

Mission Statement Summary

The Uganda Cooperative Central Union is a national cooperative union charged with the responsibility of manufacturing locally, and procuring in bulk directly from manufacturers, farm inputs, related equipment and consumer goods for sale and distribution to cooperators and noncooperators at reasonable prices, with a view to improving upon their welfare in particular, and promoting national development in general.

The UCCU is the only organization the consultant worked with that is an economic unit, or business entity in itself, for profit.

Staff Comments

The organization consists of five departments which are audit, production and planning, accounts, administration, and marketing and warehousing. The UCCU's activities are spread around several different locations, especially for the warehousing function.

Computer Capabilities

The only person with substantial computer training is the machine room supervisor, who has been briefly exposed to DOS, spreadsheet, and dBase training. Other staff computer skills are basically limited to word processing, except for four people in the Accounts Department and three people in the Audit Department who were trained in entering transactions for the Hogia accounting system.

Major Constraints

The only serious constraints to developing an MIS are the lack of computer training and power problems at the various locations. Some of the power problems may have recently been fixed.

A general evaluation of information flow and bottlenecks in the system could uncover problems with information not getting to where it needs to be in order to assist in the decision making process.

There could be a problem with the development of a stock control system if beginning balances of warehoused items are not available; a physical inventory could take some time to accomplish. The consultant was advised that the last physical inventory took place in February, 1989.

There are the usual complaints of not enough stationery, calcula-

tors, and other office supplies.

Reports/MIS Design

The Uganda Cooperative Alliance, Business Services Ltd. subsidiary is addressing computer needs for the UCCU in accounting and possibly inventory/stock control, due to an agreement between the two organizations to pursue the computerization. UCA/BSL may also do additional work regarding cash budgeting, payroll, and auditing.

Recently UCA installed the Hogia (Swedish) computerized general ledger accounting system and UCCU staff has been working to code the transactions and perform data entry. At the time of the consultant's meetings with the UCCU staff the general ledger for UCCU general, head office, and farm supply shop, a budget, and a profit and loss statement for UCCU general, head office, and farm supply shop had been generated for July, 1988. Staff felt it would be possible to bring the books up to date to the current fiscal year-end (June) by the end of July, 1989. Apart from receipts, bankings, and farm supply shop transactions and invoices, all other transactions had been coded up to April, 1989.

A particular need at this time is for aging of accounts receivable and accounts payable; it is included in the Hogia accounting system, which comes in several modules, of which general ledger is only one. Also needed are reports for daily, monthly and annual expenses, and a cash summary; all are available within the Hogia package.

A spreadsheet needs to be developed to estimate revenues. Currently, a representative from the headquarters visits each of the DU's and collects information for purchasing of warehouse parts. Estimates are prepared for costs/turnover/gross profit. This could be done much easier in a computerized spreadsheet.

Similarly, an estimate can be done for expenditure estimates. The current method is to use last year's actuals to estimate this year. Again a spreadsheet should be used. Until implementation of the Hogia system's module for budgeting, the above spreadsheets should provide a very useful function for the Accounts Department.

A cash flow/cash management spreadsheet can provide a very useful function for the Accounts Department. It may be desirable to create it as a consolidated spreadsheet linked to the revenue and expenditure spreadsheets above. This is particularly critical for the UCCU because of the movement of goods at different time periods throughout the year. Cash flow estimates are currently being done manually.

An analysis of vehicle expenses is desired by management at this time. It can be easily done with spreadsheet software and it should be noted that several of the other organizations studied had the same requirement, avoiding duplication of effort.

An inventory/stock control system (SCARLA) is being evaluated by the

UCA/BSL for use with the UCCU. A preliminary review of the system indicates that it will provide the necessary tracking for the warehousing department. UCA plans to implement the system, if asked to do so by UCCU management, after the general ledger system is well understood, accounts are up to date, and computers are installed and operating. If it is later found that the SCARLA system is not adequate to meet their needs, UCA will test other software packages and evaluate the possibility of using dBase IV. If the SCARLA system is found inadequate the consultant recommends these other packages for testing:

1. Plant Manager/Inventory Management, version 3.1
2. Anagram Stockmaster II
3. Inventory Control

Special needs for the inventory/stock control system include the ability to account for devaluations, frequent price changes, information regarding quantities and monetary values, margins, what-if analysis, lead times for distribution, supplier experience, and analysis of warehousing space costs.

Other specific requirements for the Marketing and Warehousing Department include daily, monthly, and annual sales returns reports. Individual and consolidated information is needed for twelve warehouses in three separate locations, as well as a farm supply shop. At this time about 20% of the sales go to the 34 district unions, of which only about 18 are active. It is anticipated that the district unions share of total sales will increase in the future.

A monthly stock status report is needed for 1,200-1,800 different items. It is estimated that there are currently about 60 transactions per day involving the warehouse inventory. Price changes occur often and there is a need to know the average value of inventory. Devaluations in local currency are also a factor in price setting.

The perpetual inventory system should include items that are on-hand, pre-sold, and available for purchase. Pre-sold items are not accounted for in the current manual system. The inventory system implemented should allow for such changes.

The department needs better information regarding stock movement. They also need an analysis of income for different items. It is anticipated that these capabilities will be available within the SCALA inventory/stock control system under review at this time.

During the implementation of a computerized inventory/stock control system, the current manual system described in the meetings between the warehousing staff and the consultant should not be changed, at least until after complete implementation of the computerized system. The current system of stock record cards, sales returns, and sales analysis is providing good information, but does not provide the detailed and consolidated management information that is needed by UCCU management.

It is recommended that the CAAS Project provide a short term

consultant to evaluate the procedural information flow problems that exist within the organization. The goal should be to streamline the information flow and insure that each section is receiving and providing the necessary information to support an effective MIS. This consultant could also assume the responsibility of a coordinator for the computer program development that will occur in the Ministry, through the UCA/BSL, and in the NICU, through the use of another short term consultant. See Appendices E and F for suggested Terms of Reference for those consultants.

The Audit Department has a large staff with no experience with computers. Self labeled as "watchdogs," the staff's responsibilities include audits of cash disbursements/receipts, purchasing (competitiveness, quantity, requisitions, approved vendors), reconciliation of goods received with receipts, accounts payable, records vs. physical inventory, and bank accounts. The audit of accounts cannot be performed due to the accounting records not being current. This situation should be resolved in the near future as the Hogia accounting system is fully implemented and accounts are brought up to date.

A good deal of spreadsheet work can be done with the items listed above. The organization needs assistance in setting up spreadsheets to track variances in several areas, e.g. records vs. physical inventory (by quantity and monetary values), creating necessary programs to contain a periodic listing of approved vendors and experience with them, and other forms and schedules which will assist them in performing the audit function.

Computer Hardware/Software Recommendations

The CAAS Project budget calls for one computer system with the following configuration:

1 - IBM compatible computer with minimum 40 MB hard disk, 640K RAM, monochrome monitor, Hercules graphics card, 1 360K 5.25" floppy drive, 1 720K 3.5" floppy drive, enhanced IBM keyboard
1 - Wide carriage dot matrix 24-pin printer
1 - Uninterruptible power supply (240V in/out) with built-in surge protection
Miscellaneous supplies, i.e. printer ribbons, wide and narrow paper, 5.25" and 3.5" diskettes, diskette holders

It is the consultant's understanding that under separate agreement the USAID office has ordered up to four more computer systems for the UCCU; this has not been verified at the writing of this report. If available, those computer systems should be placed in these areas with this priority:

1. Accounts Department
2. Marketing and Warehousing Department - Headquarters
3. Marketing and Warehousing Department - Kwempe office
4. Audit Department
5. General Manager/Commodity Distribution Advisor area

Computer software required and suggested for UCCU is listed below:

MS-DOS, version 3.2 or 3.3
WordPerfect word processing, version 5.0
Wordstar word processing, version 5.0
dBase IV database management
VP-Planner Plus spreadsheet/database management
Lotus 1-2-3 spreadsheet
Lotus 1-2-3 Made Easy tutorial
Hogia accounting system, including audit program generator
Possible: SCALA inventory/stock control system

Computer Training Recommendations

The UCCU has $120,000 available for all training, of which computer training is only a part, under the CAAS Project. In addition it is suggested that the local shilling budget be used to the maximum for computer training at a cost of 1,500-10,000/= per hour, utilizing UCA whenever possible.

See "Staff Comments" above for specific training that has already taken place. Additional training should be undertaken in Lotus 1-2-3/VP-Planner spreadsheets and in dBase IV database management. At least two people from the Accounts Department and three from the Audit Department should be fully trained in these areas, as well as being fully briefed and provided with manuals regarding the Hogia general ledger system. A minimum of three from the Marketing and Warehousing Department need trained in Lotus 1-2-3 to develop spreadsheets for specific purposes, which relate to the inventory/stock control and analysis discussed in the "Reports/MIS Design" section above.

The Machine Room Supervisor should be designated as the Computer Systems Administrator (CSA) for the computer systems; duties are noted earlier in this report. His computer skills are far and above the other employees.

Long Term MIS Recommendations

After the Audit Department is well trained in the use of computers, have a computer dedicated to their department, and accounts are brought up to date, it is possible to computerize the audit function by using an audit program generator. The Hogia system includes a module for auditing and it should be evaluated for use with UCCU. If the Hogia system is scrapped altogether, or the Hogia audit program generator is found inappropriate for use by the department, which are both unlikely, there are many audit software programs available for purchase.

There are 170 employees in the UCCU. This will require a good payroll system. The Hogia system includes a module for payroll; it should be installed and implemented shortly after accounts are

brought up to date through the general ledger package currently being implemented.

Appendix A

LIST OF CONTACTS

Cooperative Agriculture and Agribusiness Project

Mr. Thomas Carr, Contractor's Representative, CAAS Project
Mr. William Verner, Commodity Distribution Advisor
Mr. Michael Cornelius, Audit Management Advisor
Dr. Russell Olson, CAAS Consultant

Agricultural Secretariat

Mr. L. E. Eturu, Director
Mr. C. G. Olok, Deputy Director
Dr. N. S. Shetty, Agricultural Economist
Dr. A. M. Muthee, Economist/Statistician
Mr. K. M. Agarwal, Financial Analyst
Ms. R. Rwamororo, Agricultural Economist

Ministry of Cooperatives and Marketing - Marketing Department

Mr. E. Busingye, Deputy Commissioner for Marketing
Mr. E. Wachemba, Senior Marketing Officer
Mr. J. Mwanja, Senior Statistician
Mr. J. M. K. Sebadduka, Statistical Assistant
Mr. Mukaaya, Marketing Officer

Ministry of Cooperatives and Marketing - Cooperative Development Department

Mr. Pius Batarinyebwa, Commissioner for Cooperative Development
Mr. Apollo Babugira, Assistant Commissioner for Cooperative Development - Audit
Mr. Fred Mwesigye, Assistant Commissioner for Cooperative Development - Education
Mr. Francis Songol, Assistant Commissioner for Cooperative Development - Extension
Mr. Francis Nkurunziza, Assistant Commissioner for Cooperative Development - Registration
Mr. Kirya, Assistant Commissioner for Cooperative Development - Savings & Credit
Mr. J. Kabubi, Assistant Commissioner for Cooperative Development - Development
Mr. Martin O'obo, Project Coordinator
Ms. Caroline Asimo, Assistant Cooperative Development Officer - Development
Mr. G. V. Bagavukayo, Cooperative Officer - Development
Mr. Patrick Kayongo, Cooperative Officer - Audit

Mr. David Mwaase, Senior Cooperative Officer - Education and Training
Mr. Lubaale Kaduyu, Extension & Inspectorate
Mr. George Mukama, Senior Cooperative Officer - Projects Section
Mr. Dan B. Behaire, Cooperative Officer - Savings and Credit
Mr. Tum-Rujojo, Principal Assistant Cooperative Officer

Ministry of Cooperatives and Marketing - Planning Unit

Mr. A. M. Kaliisa, Principal Planning Economist
Ms. Gladys Alele Opito, Planning Unit

Uganda Cooperative Alliance

Mr. Charles Kabuga, General Secretary
Prof. Bibangamba, Director of Research & Policy Analysis
Mr. Olle Otteby, General Manager, Business Services Ltd.
Mr. Leonard Msemakweli, Senior Economist
Mr. Paul Oriokot, Research Assistant
Mr. Emmanuel Katougole, Research Assistant
Mr. A. Makata, Computer Manager, Business Services Ltd.

Uganda Central Cooperative Union

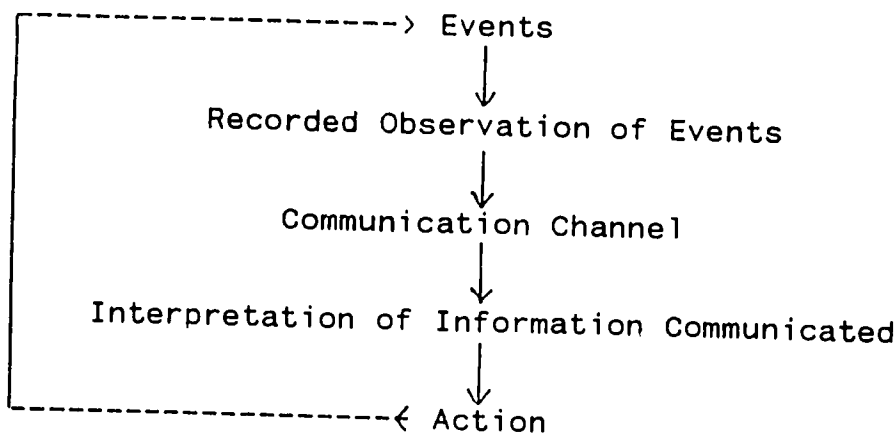
Mr. William Okoroi, General Manager
Mr. Y. Ococh, Chief Accountant
Mr. A. Mbangi, Chief Internal Auditor
Mr. Ben Okullu, Marketing & Warehousing Manager
Mr. Francis Lwanga, Machine Room Supervisor
Ms. Margret Mawanga, Principal Supplies Officer

MANAGEMENT INFORMATION SYSTEMS HANDOUT

A Management Information System (MIS) is an organized method of providing past, present, and projection information relating to internal operations and external intelligence. Ideally, it will support the planning, control, and operational functions of the organization by furnishing uniform information timely enough to support the decision-making process.

An effective system will assist the decision maker to take action which is appropriate for the events which have taken place. The information should result in the same decision as would direct observation of the events by the decision maker.

The communication of information can be illustrated as follows:



Recorded observations could be in the form of accounting records, schedules of production, labor, records, etc.

The communication channel should be in the form of a management report, generally written, but sometimes oral. An example would be a quarterly report of sales of commodities through the UCCU warehouse.

In order to interpret information and take appropriate action, management must understand how the data has been collected and how it has been summarized for transmission via the communications channel.

In order to design an MIS it is necessary for the analyst to define the information problem, collect information which identifies the information needs, and consider various alternatives to a solution.

Included in an MIS design should be an identification of the flow of information, the required training for staff, the necessary computer hardware and software, and an identification of physical system con-

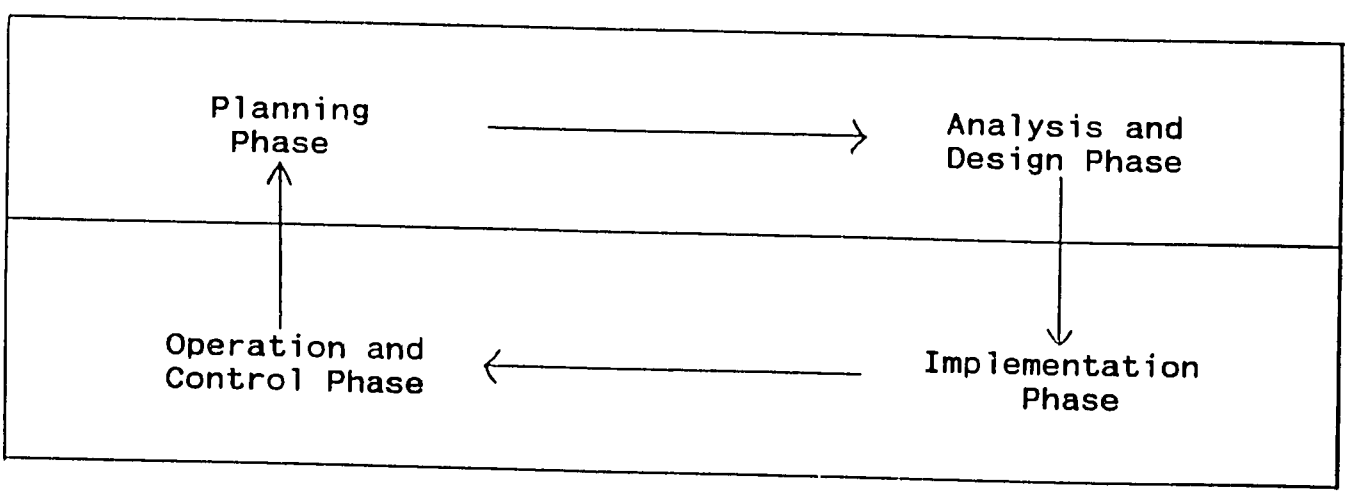
straints which hamper the development and maintenance of the MIS.

An MIS design should identify responsibility for the information system, relying on those that have been trained and best understand the users of information. Communication between all levels of management and the "programmers" of the MIS is imperative, or the MIS will not serve the overall information needs of the organization.

The MIS is only as good as the information that goes into the system. If data input into the system is incomplete, inaccurate, or untimely then the resulting information system will likewise be inadequate and not meaningful or useful to the user.

The process of developing an MIS is never-ending, as organizations strive to take advantage of new technology and methodology, and in meeting the ever changing information needs of management at all levels. It must be well understood that to remain totally efficient and responsive, a management information system that is designed, developed and implemented today will ideally need o be modified tomorrow; a management information system must be flexible and dynamic.

Achieving an MIS occurs in several phases and can be graphically illustrated as a life cycle as shown below:



In the first phase which is planning, it is preferable that the objectives of the organization be well-defined, the employees positive toward the establishment of an MIS, and the existing MIS be evaluated as basically adequate. When these conditions exist the time required for the planning phase is minimized.

It is necessary that upper level management be involved in the design and implementation of an MIS in order to insure that the MIS meets the information needs of their particular areas of responsibilities.

A good planning effort should provide benefits such as identifying tasks that are necessary for the achievement of goals, identifying potential problem areas, arranging for a sequence of tasks necessary

during the development of an MIS, and providing a basis for control. An MIS should support the organization's objectives by providing leadership with the information they need to achieve their objectives.

It is important that the planning effort involve the identification of constraints to developing and operating a newly designed MIS. It is useless to design a system that cannot fall within those constraints, some of which may even be environmental, or the MIS will have to be redesigned.

The ever improving computer hardware technology and advancing software methodology must be utilized in maintaining and improving the management information system. There is however a balance, i.e. cost vs. benefit which must be considered in making dramatic changes to the MIS, especially in an environment such as exists in a developing country, i.e. Uganda. Although new technological advancements and software applications occur at an increasing pace in the computer industry, it is important to determine what expenditures and efforts related to retraining, etc. provide a worthwhile benefit.

During both the planning and analysis and design phase it must be kept in mind which kinds of operations can benefit most from computerization. In specific, the consultant looked for instances which included:

1. Entering information only once and then printing it in several formats or sorted orders.

2. The computer could do calculations that were complex or tedious by hand.

3. The computer gave staff the ability to perform tasks that would otherwise require special expertise or training.

4. The ability to generate reports provides more timely or less expensive access to management information.

5. The ability to cross-reference information helps to produce reports that would be too time-consuming to prepare manually.

MAJOR DATA NEEDS OF UCA FOR FARM POLICY ANALYSIS AND COOPERATIVE AGRICULTURE AND AGRIBUSINESS PLANNING

A. Inputs for Agricultural Production and Agribusiness classification of inputs done in 1988 should be reviewed, updated and used on inventoring data and planning data collection. The major classes, sub-classes and specific item should be defined appropriately and used for data collection, analysis and publication.

MAJOR DATA NEEDS

1. Data series on supply and sales by major class, sub-class and item.

2. Information on volume, major users and major use of inputs by input class etc.

3. Data series on major domestic suppliers, importers and distributors by class etc. to the extent feasible.

4. Data series on wholesale and retail prices of inputs at various locations and, if possible, by major type of retailer.

5. Data series on international prices by major market source. This should cover inputs and major intermediate production goods-jute fiber, steel, plastic for bags etc.

6. Recent and current input supply (local production and import) and to the extent feasible current stocks at various levels.

7. Planned local production and imports of principal inputs for agricultural production and small scale processing equipment and supplies in next 6 months, 12 months, 18 months.

8. Estimated requirements for various classes, sub-classes and items . To the extent possible this should be related to realistic national targets on production and related agribusiness.

9. Plans for local production of essential items (e.g Bags, hoes, other tools) and intermediate goods required for such production (e.g steel, fiber, chemicals etc.)

NICU is assembling some current information under 1, 3, 6, 7, 8 and 9

SOURCE: DR. RICHARD NEWBERG, RONCO CONSULTANTS, 1989

10. Marketing structure and costs for various inputs and functions in distribution. This is done on or annual basis for fertilizer in Asian countries. Such a system of data collection might be developed in Uganda for selected inputs. Data may be available from other countries in the region for comparison.

NICU is conducting two studies of immediate interest One on alternative mechanization methods (from hand tools to trac tors) and one on use of agriculture chemicals (pesticides, fertilizer, limestone etc.) Both will look at economics of alternatives in different regions, cropping systems etc. These should provide a basis for making decisions on input priorities. NICU also is to look at local production of inputs and economic priorities on promotion of such local production. It has other studies in planning stages.

NICU and Bank of Uganda are supposed to be assembling some of this information and Ministry of Agriculture, Ministry of Livestock and Ministry of Cooperatives and Marketing also should be interested, in such information Programs should be reviewed and plans of UCA/CDP developed in consort with these organizations.

B. Agricultural Products

Prepare a simple classification for products of interest: major classes and sub classes, specific commodities, grades and classes. Use these as appropriate information inventory, collection and analysis.

MAJOR DATA NEEDS

1. Data series on production and marketing in Uganda by zones.

2. Data series on production import and export and total supply nationally.

3. Data series on farm prices by areas.

4. Data series on wholesale and retail price by areas for raw products and where appropriate, for processed products e.g oilseed, oil and seed.

5. Data series on international prices of commodities of current or prospective interest to Uganda and to cooperatives (Coffee, cotton, tea, tobacco, kenaf, jute, fruits, vegetables, grains, legumes, oilseeds etc.)

6. A base line study on the marketing structure for major commodities in Uganda.

a) channels, types of businesses, volume etc by functions (assembly, transport, wholesaling, processing, retailing etc. from farm to consumer and export;

b) pricing process at different levels;

c) at some point, a study covering costs and margins of different organization for different functions, and if possible a breakdown of costs by major input (labor, facilities, capital, fuel, utilities, administration, taxes etc.)

7. Assembly of reports on international markets for various commodities.

8. Physical inputs and outputs by regions and by major commodities and farming system covering traditional systems, transitional systems and advanced systems (most successful farmers) and different sizes of farmers.

9. Periodic studies to identifying major constraints to increased production of various commodities: traditional farmers, transitional farmers; most progressive farmers in different size categories and regions.

C. Cooperative analysis of Operations (both present and prospective new activities)

Data series and current information are needed covering a variety of cooperative operations to:

a) provide guidance on activities requiring improvement and specific recommendations for improvement - management, finance, pricing, staff and staff development, physical facilities and their use; transport; measures of efficiency for specific operation such as assembly, processing, transport, warehousing etc.

b) provide guidance in identification of new potentially profitable economic activities and detailed planning and implementation of specific new ventures.

Two types of data collection are suggested:

1. Data from routine accountancy reports and internal and external audits. CDD should review their data collection and discuss possibilities for strengthening their data series to better serve the need of cooperatives and specifically the services to be provided by the CCD and the Audit Co.

2. Additional data assembled from primary societies and Unions which would provide a basis for comparative analysis:-

   a) among cooperatives

   b) between comparative and other business in Uganda

   c) with similar businesses in the region and countries outside the region

   d) with modern business concepts and criteria of efficiency available from management text books and other literature. (ACDI/RONCO would assist in obtaining literature required for c) and d) above. This is a appropriate expenditure under CAAS.)

This information and analysis will provide guidance on improvement of current operations. It will also be of great value in identifying areas where cooperatives are likely to be most competitive. This information used in conjunction with that from A and B should permit CDD to assist cooperatives in selecting potentially profitable areas and planning successful cooperative operations.

D. Suggested steps in developing the data collection progrm:

1. Review the above (A, B, and C) in relation to the major UCA plans and activities. What are the priorities with respect to:

a) General economic data collection and analysis to keep abreast of developments in Uganda and in world market which potentially affect Ugandan agriculture and agribusiness. Basically to have an informed economic staff able to supply information and provide advice and counsel on various issues as they arise, including investments, operational decisions, market choices, pricing of products, bidding...

b) Agriculture and agribusiness <u>policy</u> analysis with respect to pricing of inputs and outputs, and marketing margins; choices in forms of business particularly as between the public sector and the private sector; national allocation of resources establishment of interest rates and other loan terms; needed incentives for farmers and for agribusiness; financial requirements of the cooperative sector;etc.

c) Guidance of Business Operations of Cooperatives

2. a) conduct a general review (i) within UCA; and (ii) among the CAAS collaborated: the entire cooperative movement, NICU and MCM; (iii) the

above and other interested Ugandan organization such as the Bank of Uganda, Ministry of Agriculture, Ministry of Livestock to identify and define areas of common interest.

b) contract with or hire a senior Makerere University graduate economics student or a staff member to do a literature search and a bibliography of available literature in Uganda and, if possible available information of value from Kenya, Tanzania and Zimbabwe. This should include a review of data series, identification of discontinuities and suggestions on measures to bridge major discontinuities where this is essential.

3. Identification of major deficiencies in data and analytical work between needs and that found in the inventory.

4. Selection of priorities for additional data collection and analysis

5. Identification of organizations with similar interests and priorities.

6. Develop a cooperative plan for data collection and analysis

7. Work out an arrangements with the Makerere University (Ag. Econ.) and others for assistance in design of samples and questionnaires and other formats for specific studies. .

ACDI/RONCO can assist in these steps but it should be possible to carry out mostly of steps 1 - 6 with available Ugandan resources.

A RONCO Consultant could be brought in at step 7 or earlier if found necessary. RONCO will have an experienced agriculture economist (Production Economist)working 5 - 8 months which NICU during the next year on the NICU studies mentioned after item A 10. He could help in the above process. Also USAID will have two full time agriculture economists working with Makerere University over the next two years who can be drawn upon. (I suggest you obtain a commitment from USAID and Ohio State University on this before Lyvers leaves.) RONCO will provide additional short term help if CAAS agrees to such assistance.

The 1989-90 plan for the CDD should include funds, as appropriate, under CAAS to carry out the parts of the program CDD considers most important.

Appendix D

Terms of Reference - Agricultural Information Specialist (UCA)

Length of consultancy: 3 months

1. Identify data requirements and possible locations of data for the UCA - Cooperative Development Section, taking into consideration the existing mission statement of the organization.

2. Identify data requirements that are duplicated by the other organizations studied in the recent MIS needs assessment of Agricultural Secretariat/NICU, MCM/Marketing Department, MCM/Cooperative Development Department, MCM/Planning Unit, and UCCU (see July, 1989 report by R. Pierce/ACDI). Develop recommendations on the sharing and flow of such information.

3. Identify major deficiencies in data and analytical work between needs and that found in the inventory of data available.

4. Supervise a Makerere University graduate economics student or staff member hired to do a literature search and a bibliography of available literature in Uganda and, if possible available information of value from Kenya, Tanzania and Zimbabwe.

5. Recommend priorities for additional data collection and analysis, and a cooperative plan for collection of that data.

6. Make recommendations concerning the design of samples and questionnaires and other formats for specific studies.

Terms of Reference - Computer Systems Analyst/Programmer (NICU)

Length of consultancy: 3 months

1. Work with the Agricultural Secretariat/National Inputs Coordination Unit to:

   a. Develop computer programs identified in the management information systems specialist's report, utilizing software programs identified by him.

   b. Develop written user instructions for the specific computer programs, when necessary.

   c. Provide initial database and spreadsheet training for the NICU staff.

   d. Identify additional training requirements for the NICU staff.

2. Prepare a brief written description of accomplishments.

3. Other duties that may be assigned by the Computer Development Specialist/Coordinator, which are consistent with the overall scope of this assignment.

Appendix F

Terms of Reference - Computer Development Specialist/Coordinator

Length of Consultancy: 3 months

1. Work with the Uganda Central Cooperative Union and the UCA/Business Services, Ltd. subsidiary to:

a. Review the current stage of development regarding the Hogia general ledger accounting system and the inventory/stock control system, and make recommendations.

b. Perform a complete review and make recommendations for streamlining the procedural flow of information within the organization, including the inventory/stock control system, the accounting system, and other internal reporting, from the source documents to the final MIS reports.

c. Prioritize and make recommendations regarding the assignment of computer program development for the UCCU. Work with UCA - Business Services Ltd. in the initiation of development of those programs identified in the recent MIS needs assessment.

d. Evaluate specific staff computer training requirements to support the proposed MIS.

2. Coordinate and supervise the activities of the Computer Systems Analyst/Programmer working with the Agricultural Secretariat/NICU.

3. Coordinate the activities of the computer program development necessary in the MCM/Marketing Department, MCM/Cooperative Development Department, and MCM/Planning Unit, working with UCA's Business Services Ltd. to insure that computer development is initiated.

4. Prepare a brief written description of accomplishments.

5. Other duties that may be assigned by the team leader, CAAS Project, which are consistent with the overall scope of this assignment.

INDEX OF REPORTS - SUGGESTED DATA FIELDS

Report Name	Subject	Information Within	Date	Prepared By	Maintained By

UCA/BUSINESS SERVICES LTD. COMPUTER COSTS

Computer Hardware

Lab Data PC-88E, 8/10 Mhz 14" monochrome monitor 640 Kb RAM Hercules graphics		$ 1,310
3 1/2" internal floppy drive (720K)		170
Professional keyboard (enhanced)		150
Hard disk (40 MB)		1,000
Uninterruptible power supply	approx.	500
Automatic voltage regulator	approx.	200
Star LC-10 narrow carriage printer		650
Star ND-15 wide carriage printer		1,100

Computer Software

MS-DOS 3.3	no charge
Lotus 1-2-3 2.01	495
Lotus 1-2-3 Made Easy	75
VP-Planner Plus	249
dBase IV	725
Reflex 1.4	150
WordPerfect 5.0	495
Wordstar 5.0	350
Nuametrics Econometric Analysis	195
Sidekick	85
Quick Schedule Plus	70
Tymaster 3.1	59
Knock-Out	50
Harvard Total Project Manager II	595
Time Line 3.0	595
Rats 1.0	20
Compran	unknown
Hogia General Ledger Accounting System	unknown
SCALA Inventory/Stock Control System - Integrated	unknown

Note: All software prices listed above are retail. Discounts of up to 40% can be obtained on many.

Appendix I

NICU SOURCES OF DATA

Primary Data Sources	Method
On-farm field surveys	Questionnaires to farmers
Farm supply shops	Questionnaires to shop owners
Importers and distributors of inputs	Questionnaires to importers and distributors

Secondary Data Sources	
Ministry of Agriculture and Forestry	Site visits
Ministry of Animal Industry and Fisheries	Site visits
Ministry of Planning and Economic Development	Site visits
Uganda Cooperative Central Union	Site visits
Cooperatives	Site visits
Existing Reports on Inputs	Within AS
Farm Supply Shops	Site visits

Donor Agencies

IDA
EEC
USAID
UNDP/UNCP
IFAD/World Bank

Bilateral Agreement with Government of Uganda

Finland
Italy
Japan
West Germany
United Kingdom
Sweden

Ministries/Projects and Parastatals

TAMTECO
Ministry of Agriculture
Cocoa development project
Ministry of Animal Industry
Tsetse Control Department
Veterinary Department
Dairy Development Committee
Ministry of Rehabilitation

ARP - UCB
ADP
UCCU
UTGC
BAT (U) Ltd.
Agricultural Enterprises Ltd. (AEL)
ECPP - Cotton
UTC
Kakira
Lugazi
UCB - other projects
PMB - gunny bags
PMB - storage chemicals
Ministry of Rehabilitation
Ministry of Reg. Cooperation
Ministry of Environment/Forestry
Ministry of Cooperatives and Marketing

Non-Government Organizations

UNHCR
Red Cross
Church of Uganda
Catholic Church
UNICEF
(NA) ACORD

Firms

Agro - Machinery
Farm Inputs - Uganda
Agromed Ltd.
Shell (U) Ltd.
Amstrades
Welcome (U) Ltd.
Twiga Chemical Industries
General Machinery Ltd.
Gailey and Roberts
Farm Machinery Distributors (U) Ltd.
Uganda Hardwares
Associated Chemicals
Nile Chemicals
Industrial and Agricultural Chemicals Ltd.
Ciba - Geigy
May and Baker

Appendix J

LIST OF REPORTS ON AGRICULTURAL INPUTS (NICU)

Agricultural Policy Committee, Final Summary Report, April 15, 1987 -Agricultural Inputs, Working Group No. 7

Farm Inputs required in the Luwero Triangle - A needs assessment survey

Input Prices

Fertilizer Consumption in Uganda, 1969-75

An analysis of the choice and economics of technological inputs and packages for modernization of Uganda's agriculture

Economics of Cotton, Pest Control, Tororo District, 1982-83

A Fertilizer Marketing Enterprise in Kenya

Agricultural Inputs: Procurement, Stocking, Distribution

A Comparative analysis of the Degree of Privatization of Uganda's and Kenya's Agricultural Inputs Distribution System

Kenya's Fertilizer Market

A Market Survey of Agrochemicals in Kenya

Framework and Guide to Assessment and Development of the Fertilizer Sector in Asia and the Near East

Private Seed Industry Development in Uganda, March, 1988

Agricultural Services for Food Crops

Analysis of Costs, Production and Returns of Principle Crops in Uganda

The Management of Agricultural Mechanization by Farmer Cooperatives in Uganda

The Use of Domestic Resources Cost Method to Determine Uganda's Comparative Advantage in Production of Some Agricultural Commodities

Food Production in Uganda, Past Trends and Future Prospects

Extension for Agricultural Services in Uganda

Agricultural Mechanization, Issues and Options

Animal Feeds Industry in Kenya

Kenya's Fertilizer Marketing Requirements

ARP - Procurement of Recurrent Imports (Crown Agents)

Uganda Phosphate Engineering Project, Phase II, Volume V of VI

Uganda Phosphate Engineering Project, Phase II, Volume VI of VI

Brief on Low Cost Farm Equipment Project

Strategies for Improving Availability and Distribution of Agricultural Inputs in Southwest Uganda

The Food Crops Sector in Uganda

Fertilizer Situation, 1981-82

Marketing and Distribution of Agricultural Chemical and Farm Tools in Uganda, May, 1988