PD-AAN-331
isn = 31866

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Credit Union Development	631-0044	USAID/Cameroon 57

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 631-83-5

[X] REGULAR EVALUATION [ ] SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 1981	B. Final Obligation Expected FY 1983	C. Final Input Delivery FY 1986	A. Total $ 1,600,000 B. U.S. $ 1,600,000	From (month/yr.) August, 1981 To (month/yr.) April, 1983 Date of Evaluation Review July, 1983

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Training Expert should be hired as soon as possible.	Dean Mahon	12/83
2. Project team should submit their draft monthly activity reports directly to AID at the same time they submit them to WOCCU/CUNA, to avoid unnecessary delays.	Ken Kerkhoff	immediately
3. Targets for liquidation and consolidation of credit unions should be revised.	CAMCCUL	10/83
4. Targets for participation of credit unions in the SFPC program should be reviewed and revised if necessary.	CAMCCUL	10/83
5. CAMCCUL should attempt to get more cooperation from the Ministry of Agriculture extension agents in providing inputs supportive of the SFPC program.	CAMCCUL	12/83

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- [ ] Project Paper
- [ ] Financial Plan
- [ ] Logical Framework
- [ ] Project Agreement
- [X] Implementation Plan e.g., CPI Network
- [ ] PIO/T
- [ ] PIO/C
- [ ] PIO/P
- [ ] Other (Specify)
- [ ] Other (Specify)

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. [ ] Continue Project Without Change
- B. [ ] Change Project Design and/or
  - [X] Change Implementation Plan
- C. [ ] Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Marcel Ngué, USAID/Cameroon
Randal Thompson, USAID/Cameroon
Abraham Ndofor, CAMCCUL
John Carraciola, CUNA
Kenneth Kerkhoff, CUNA
Dean Mahon, WOCCU/CUNA

12. Mission/AID/W Office Director Approval

Signature: Bernard D. Wilder

Typed Name: Bernard D. Wilder

Date: August 8, 1983

AID 1330-15 (3-78)

EXECUTIVE SUMMARY

Date: July 19, 1983

Project: Credit Union Development (631-0044)

Country: Cameroon

Period of Project: 1981-86

I. What constraint did this project attempt to relieve?

The project attempts to relieve the constraint caused by lack of savings institutions and sources of credit for the common person and lack of credit for the small farmer, prohibiting him from purchasing inputs to increase production, and a lack of management techniques to operate a credit program.

II. What technology did this project promote to relieve this constraint?

The technology includes a credit union institution which provides services to local credit unions, and improved management techniques to assure viability of credit institution.

III. What technology did the project attempt to replace?

The technology replaced includes traditional savings groups, "buyam sellams," and money lenders, and unsophisticated management techniques.

IV. Why did project planners believe that intended beneficiaries would adopt the proposed technology?

The credit union movement had already started prior to the project so the interest was already expressed.

V. What characteristics did the intended beneficiaries exhibit that had relevance to their adopting the proposed technology?

The beneficiaries have a need to save money, have a need for credit, and have the motivation and education to understand the management techniques proposed.

VI. What adoption rate has this project achieved in transferring the proposed technology?

The credit union institution has easily assimilated the new management techniques and new credit unions are being created.

VII. Has the project set forces into motion that will induce further exploration of the constraint and improvements to the technical package proposed to overcome it?

Yes, CAMCCUL organization is tied into the African and International credit union movement, so that it will benefit by new information and knowledge. A Baseline data survey has been carried out to further explore constraints and to measure improvements to the technical packages.

VIII. Do private input suppliers have an incentive to examine the constraint addressed by the project and to come up with solutions?

Yes, private input suppliers have an enormous incentive to provide inputs for the small farmers to purchase since the credit is available.

IX. What delivery system did the project employ to transfer technology to intended beneficiaries?

The project is trying to create an institutional network (CAMCCUL) which will deliver credit to the beneficiaries, and a system of "fieldworkers" who will deliver improved management techniques. CAMCCUL provides seminar programs for instructing credit union officials in management techniques. In addition, CAMCCUL provides beneficiary education through local promotional activities and readio programs.

X. What training techniques did the project use to develop the delivery system?

The project trains "trainers" who will then interact directly with credit union members and officials. Lectures, discussions, workshops, and audio-visual techniques are used.

XI. What effect did the transferred technology have upon those impacted by it?

A baseline study has been conducted and impact of technology will be measuredfollowing project completion.

13. SUMMARY

13.a. The Credit Union Development Project (631-0044) proposes to strengthen Cameroon's national and regional credit union structures (secondary societies) so that they become financially self-sufficient and technically able to provide essential services required by their affiliated credit unions; and to create an expanding network of credit unions which have the financial and technical capabilities sufficient to provide required savings, credit, and related financial services to an increasing membership.

13.b. The project is being implemented through a 4-year OPG to CUNA. CUNA is providing three long-term technicians: a credit union/league management specialist, an agricultural credit specialist, and an education and training specialist. Other organizations are also participating in the project, including ACOSCA, the Konrad Adenauer Foundation, the Dutch Volunteers, and the Peace Corps.

13.c. An AID evaluation was conducted in April, 1983 by the USAID/Cameroon evaluation officer, accompanied by the CUNA project officer. The project's nine major components were assessed to determine whether adequate progress has been made toward the achievement of project objectives. These objectives are identical with the objectives of CAMCCUL as established in their Five Year Plan.

13.d. Evaluation Findings

The evaluation found that progress has been made in the achievement of most of the nine project objectives, although, in some cases less progress has been made than originally planned. Because of the delay in the hiring of the CUNA-funded training specialist, a great deal of the chief-of-party, management specialist's time has been spent during the first year and a half of the project on training. Consequently, most of the progress made to date has been in this area, largely due to the high quality and dedication of CAMCCUL training staff guided by the CAMCCUL manager and the chief-of-party. When the training specialist is on board, the chief-of-party will focus more on improving the operations and planning capability of CAMCCUL.

13.d.1. Development of a membership education program

During 1981 CAMCCUL conducted 27 seminars and during 1982, they conducted 20 seminars for credit union officials, CAMCCUL staff, the Board of Directors, bookkeepers, credit committees, on topics such as bookkeeping, credit union management/administration, control measures and audits, risk management, loan granting and procedure, credit union loan policy, cooperative law, and credit union bye-laws.

CAMCCUL is just starting to develop a program aimed directly at credit union members. This program, designed to improve the management and functioning of credit unions will be implemented by the fieldworkers, who regularly contact the members. A week-long training course for fieldworkers was held in the South-West Province during the last week of April, 1983 to begin this process.

Although CAMCCUL fell slightly short of its training objectives for 1981 and 1982, they have made consistent progress in this area.

13.d.2. Expansion of the Production Credit Program

The expansion of the small farmer production credit program has been a slow process. At the end of year one, there were 15 SFPC Credit Unions, one half of the project target number. As the SFPC advisor points out, a production credit program cannot work unless constraints to increased production are addressed. Credit must be employed to purchase inputs which address specific production constraints and these inputs must be made available. On the output side, markets must exist to create an incentive to increase production. As a consequence of this, the SFPC advisor spent a great deal of his initial time trying to assure that an adequate input and output system existed. He was criticized for doing too much extension work and changed his strategy to systematically informing credit unions about the program, selecting suitable credit unions to participate in the program, and training credit union people in the mechanics of the program. This program will grow very slowly and the target of 28 may be too ambitious. The fact remains that the program can only work if the constraints to increased production are addressed; otherwise, the farmers cannot take the risk.

13.d.3. Training of Fieldworkers in Central Services

There have been two major seminars thus far in the project to train fieldworkers in various aspects of central services: periodic inspections, annual audits, evaluations of credit union performance, risk management, program operations, and evaluations of loan applications from affiliates to CAMCCUL.

13.d.4. Consolidation of Non-Viable Credit Unions.

The chief-of-party has studied the status of individual credit unions and selected those which should be liquidated or consolidated. During the project's first year, four credit unions were liquidated and two were merged into other existing ones. However, it is certain that this objective will not be achieved by the end of the project's second year as originally anticipated. Legal requirements and the sensitivity to the maintenance of ethnic and regional balances within the credit union movement have made this objective extremely difficult to achieve.

13.d.5. Personnel Management

The personnel system, including an employees' policies and procedures manual, is to be completed by the end of the project's second year. Hence this component was not evaluated.

13.d.6. Planning Capability

Since CAMCCUL has been a viable organization since 1967, it has developed an ability to plan and carry out plans. However, an objective of the project is to more fully systematize and formalize this process. Activities toward the achievement of this objective have not yet been started. The feasibility of using computers to facilitate planning is being explored.

13.d.7. Development of National and Regional Structures

Progress toward the objective of uniting all Cameroonian credit unions through provincial secondary bodies to a single national association has been very slow due to the cultural and regional differences between the CAMCCUL credit unions and the Caisse Populaire, the other credit union movement. A meeting was held between the two organizations and promises were made to continue a positive rapport; hence the necessary first step has been made.

13.d.8. Shared Management Services

This objective of providing professional management to credit unions operating in close geographical proximity to each other has not yet been pursued by the project, and hance was not evaluated.

13.d.9. Preparation of Manuals

A bookkeeping manual, an auditing manual, and three standard policies and procedures guides have thus far been developed.

13.e. Financial Objective: Self-Sufficiency for CAMCCUL

According to projections shown in the project's first Annual Report, financial self-sufficiency can be achieved by the project's end.

13.f. USAID Project Monitoring

There have been some misunderstandings between the project staff and USAID/Cameroon, sometimes leading to a breakdown in communication. However, the management and monitoring system has been worked out and communication is now flowing better.

13.g. Recommendations

The major recommendations of this evaluation include:

13.g.1. Revise targets for the liquidation and consolidation of credit unions. Project experience has clearly shown that this process has met considerably more resistance and will take longer than anticipated. The project team should re-appraise its approach to this task, also, to assure that they fully appreciate the reasons for the resistance and can adequately address the concerns of the credit union members.

13.g.2. Attempt to define and develop a closer liaison between the Small Farmer Production Credit Program and the extension service in the target provinces. Revise down-ward the number of credit unions target to participate in the SFPC program.

13.h. Conclusion

This project is a model project in several respects and has an excellent chance of successfully achieving its ultimate objective of financial and technical self-sufficiency for CAMCCUL.

13.h.1. First of all, this project illustrates the positive employment of a PVO to implement a development project. The PVO, in this case, has years of experience in establishing expertise to successfully manage such a project, and indeed assists AID in fulfilling its mandate "to do more with less" in the sense that USAID/Cameroon's backstopping requirements for this project are significantly less than for a bilateral project.

13.h.2. Secondly, this project represents an example of a private enterprise venture which thrives with limited governmental support. The involvement of the GURC's Ministry of Agriculture, Department of Cooperation and Mutuality, is mainly to oversee the progress made in the cooperative movement.

13.h.3. Thirdly, the project is one which has an organizational structure which supports it and thus almost guarantees its success. The support of CAMCCUL by ACOSCA and WOCCU/CUNA reinforces CAMCCUL's permanance and makes it part of a world-wide network of credit unions which has already been established. Hence, there is a good chance that an institution has been and continues to be built with a high potential to endure long after the project.

13.h.4. Fourthly, the project is one which has built on a pre-existent, spontaneously created social movement. As a consequence, the momentum for the social change, the interest of the beneficiaries, and the felt need for the new technology all very clearly were present prior to project intervention, and hence there is no requirement to initiate a change for which no preconditions exist. Rather, there is a natural base and "bottom -up" thrust for the project which is assurance that the project will succeed.

13.h.5. Finally, the project possesses the magic of charisma, dedication, and qualifications of its participants. The manager of CAMCCUL is a charismatic figure who inspires confidence in the movement. His staff is dedicated, hard working and always anxious to improve their capabilities. The technical assistance team also has the ability and dedication to give impetus to the march of CAMCCUL toward self-sufficiency. In short, this project has many of the qualities idealized by theorists of development administration.

14. EVALUATION METHODOLOGY

This formative evaluation was conducted in order to determine whether adequate progress was being made by the project toward the achievement of stated objectives. The evaluation was conducted by the USAID/Cameroon evaluation officer, accompanied by the WOCCU/CUNA project officer.

Project documents and files were thoroughly reviewed, WOCCU/CUNA technical assistants, CAMCCUL staff, and field workers were interviewed, and a credit union was visited.

The project objectives are to be met by the collaboration of several organizations including AID, GURC, CUNA, CAMCCUL, ACOSCA, the Konrad Adenauer Foundation, the Dutch Volunteers, and the Peace Corps. Consequently, it was impossible to separate out and evaluate only the project activities supported by AID. Instead, progress toward achievement of all project objectives was measured, which essentially meant asking to what extent CAMCCUL had realized its Five-Year Plan.

Those who participated in the evaluation included:

Marcel Ngue, USAID/Cameroon
Dean Mahon, WOCCU/CUNA
Abraham Ndofor, Manager, CAMCCUL
Randal Thompson, Evaluation Officer, USAID/Cameroon
Ken Kerkhoff, Chief of Party
John Carraciola, SFCP Specialist

15. PROJECT BACKGROUND

The first credit union was formed in the village of Kikai-kelaki in 1963 by Father Tony Barnicle. By 1968, when the Cameroon Cooperative Credit Union League, Ltd. (CAMCCUL) was formed there were 67 credit unions with 3500 members and a savings of $67,000.

In 1974, talks between CUNA and CAMCCUL led to the design of a project to promote small farmer production credit. The project was funded by AID via an OPG. Qualified credit unions received League loans for relending to farmer members. To qualify, a credit union had to have at least 50% of its members as full time farmers and be willing to be supervised by CAMCCUL and CUNA. The project ended on September 30, 1979, and had a limited success.

The current project represents a logical extension of the SFPC project, plus attempts to strengthen weaknesses in CAMCCUL which were identified in a 1978 institutional analysis conducted by CUNA/Global projects.

16. PROJECT OBJECTIVES

16.a. The goal of the Credit Union Development Project is to develop a strong cooperative savings and credit union movement in Cameroon.

16.b. This goal will be achieved by two mutually reinforcing purposes:

(a) Strengthening of Cameroon's national and regional credit union structures so that they become financially self-sufficiant and technically able to provide essential services required by their affiliated credit unions; and

(b) Creation of an expanding network of credit unions which have, with the support of national and regional associations, the financial and technical capabilities sufficient to provide required savings, credit and related financial services to an increasing membership.

16.c. Financially self-sufficient denotes that the concerned organization will generate sufficiant revenues from its own sources to enable it to sustain the required level of program operation. Technically able means that the organization would possess the technical capabilities essential to both performance of its organizational functions and provision of necessary services to its affiliates.

16.d. The end-of-project conditions for the project are:

(a) CAMCCUL should have raised its level of financial self-sufficiency from its current level of about 65% to a full 100%.

(b) CAMCCUL League staff skills should be at an acceptable level, and a sound personnel system will be in place which will allow the organization to maintain these skills by recruiting capable individuals to replace departing personnel.

(c) At the provincial level, semi-autonomous leagues will have been established to provide those services to credit unions which cannot be effectively provided centrally by CAMCCUL headquarters staff.

(d) At the primary society level, more than 170 credit unions should be operating with 75% or more having attained financial and technical self-sufficiency.

16.e. There are nine major project components:

16.e.1. Development of a Membership Education Program

CAMCCUL and CUNA will develop programs of formal and on-the-job training in the following areas:

- bookkeeping
- preparation and use of operating budgets
- credit policy and procedures
- basic financial statement and statistical analysis
- use of interest tables and formula to calculate interest due on loans, the amount of installments, dividends on members' shares, and interest on members' savings.

By the end of the project, it is anticipated that at least 450 credit union members from approximately 144 credit unions will be able to adequately perform the above processes.

16.e.2. Expansion of the Production Credit Program

By the end of the project, at least 28 credit unions will have demonstrated the capability to effectively place and collect League sponsored production credit loans, as well as promptly repay any loans, with interest, that may have been granted by CAMCCUL to said credit unions.

16.e.3. Training of Field workers in Central Services

As a result of formal and on-the-job training by senior CAMCCUL and CUNA staff, CAMCCUL field workers will perform the following processes:

- periodic inspections
- annual audits
- evaluation of credit union performance
- risk management program operations, and
- evaluation of loan applications from officials to CAMCCUL

16.e.4. Consolidation of Non-Viable Credit Unions

All non-viable credit unions existing at the start of the project will be liquidated or merged during the first two years of the project. A non-viable credit union is (1) one whose total shares and savings is not growing at a rate consistent with minimally acceptable levels. (2) one in which the total amount of delinquency exceeds 200% of the sum of shares and legal reserves.

16.e.5. Personnel Management

By the end of year two of the project, CAMCCUL will develop and document in the form of an employee policy and procedure manual, a personnel system.

16.e.6. Planning Capability

CAMCCUL will develop its ability to develop and implement strategic and action plans consistent with affiliated credit unions' needs and resource availability.

16.e.7. Development of National and Regional Structures

All credit unions in Cameroon will be united through provincial secondary bodies to a single national association.

16.e.8. Shared Management Services

CAMCCUL will develop and test alternative methods of providing professional management to credit unions operating in close geographical proximity to each other, but which individually do not require or cannot obtain qualified part or full time management.

16.e.9. Preparation of Manuals

CAMCCUL will complete development and documentation in French and English of operating manuals for at least the following credit union operating systems:

- bookkeeping
- budgeting
- credit policy and procedures
- membership and savings promotion
- internal auditing

16.f. Participating Organizations

Several organizations are participating in the project, including CAMCCUL, the Union des Caisses Populaires of the Centre-South Province, GURC, WOCCU/CUNA, AID, the Africa Cooperative Savings and Credit Association (ACOSCA), the Konrad Adenauer Foundation(KAF), the Peace Corps, and the Netherlands Volunteer Organization (ONV). The Peace Corps and the ONV will provide volunteers to fill field worker positions.

16.g. Technical Assistance/Training

WOCCU/CUNA is providing three long-term technical assistants: one credit union/league management specialist (5 person years); one agricultural credit specialist (3 person years); and one education and training specialist (2 person years).

ACOSCA will continue to provide seminars for League and credit union staff on technical subjects and will also continue to provide technical backstopping to CAMCCUL's risk management program.

The Konrad Adenauer Foundation will continue to finance CAMCCUL's membership education program and a resident advisor.

17. IMPLEMENTATION CHRONOLOGY

November, 1979: Meeting at the Dept. of Cooperation and Mutuality to discuss CAMCCUL/CUNA Proposed Five Year Plan and possible donor participation. Participants included World Council of Credit Unions/CUNA, Konrad Adenauer Foundation (KAF), German Volunteer service, Organization of Netherland Volunteers, Cameroon Cooperative Credit Union League, Coop/Mut, USAID.

a. Peace Corps expressed interest in making volunteers available to CAMCCUL.

b. KAF stated it would continue with its traditional participation in membership education program and budgetary support.

c. Dutch Volunteers will still participate if following conditions are met:

(1) must have counterparts;

(2) need clear task description and advance knowledge of geographic/job location.

d. German Volunteer Service stated that they may provide one or two volunteers

e. USAID stated it is interested in continuing its support for CAMCCUL but would not provide budgetary support.

January, 1980: USAID/Cameroon receives proposal from CUNA for OPG.

March, 1980: USAID/Cameroon reviews OPG proposal from CUNA. Raises several issues.

March, 1980: CUNA responds to USAID concerns:

a. Revenues/Portfolio composition.

b. CAMCCUL's projected expenses.

c. Cost of supporting volunteers.

d. Project should include longtudinal study of impact.

e. Non-financial indicators may be too ambitious.

f. CUNA's final report on SFPC program raises issues that require discussion.

August, 1980: Meeting held to ascertain level of interest of each participating organization.

a. USAID - would approve OPG.

b. CAMCCUL - CAMCCUL's Board of Director's approved project.

c. KAF - willing to fund CAMCCUL's training program and certain operating costs through Dec. 31, 1982. Stated that KAF's continued support of CAMCCUL contingent upon their recruitment of a suitable Cameroonian Education and Training Officer.

d. Peace Corps - asserted that between 3 and 6 credit union volunteers would be provided to CAMCCUL.

e. Netherlands Volunteers interested, but made no commitment as to number of volunteers.

f. German Volunteer Organization - no role.

December, 1980: Working session in the conference room of the Directorate of Programming, Ministry of Economic Affairs and Planning on project. It was recommended that Cameroon Ministry of Agriculture through the Directorate of Cooperation and Mutuality (CoopMut) supervise the project execution with its own personnel and equipment. Supplementary means including five vehicles and operating costs were recommended to be added to project.

January, 1981: Above-mentioned recommendation was denied since AID's grant to CUNA does not include the financing of GURC costs to supervise the activities to be carried out in the project.

July 20-August 10, 1981: Two technical advisors received orientation to WOCCU, Washington.

August 12, 1981: Two technical advisors arrive in Douala.

November, 1981:

- Two technical advisors working on final reports on the status of credit union activities.
- 3 seminars held for bookkeepers in conjunction with Konrad Adenauer Foundation.
- SFPC specialist presents three-hour discussion/instruction to CAMCCUL staff on SFPC program.
- 24 CAMCCUL staff members participated in a five day seminar about CAMCCUL's central services.
- League Manager attended 5-day ACOSCA seminar in Nairobi on design of auditing book.
- Assimilation of materials to prepare field workers' manuals.
- Review of 1980 annual credit union reports.

December, 1981:

- SFPC specialist formulates a plan to establish demonstration sites for production of wheat, upland rice, in Bui Division, and corn, beans, and potatoes in Mezam Division. Ordered 776 kg of improved maize seed and 220 kg of beans.
- met with divisional delegates of agriculture for Manyu, Menchum, Momo, Meme, Bui, and Donga-Mantung Divisions to discuss training seminars.

- contacted IRZ to arrange purchase of feedgrains from credit union farmers in production of maize and soybean.

- met with managers of agrichim and saproc, agro-chemical suppliers in Douala to discuss procurement of chemical supplies for farmers in demand for such in SFPC farmers.

- contacted INADES to discuss their farmer training programs and to arrange that their services be provided to complement training given by MINAGRI.

- made land surveys in Santa on several farms cultivated by credit union members, where demonstration and trial plots will be established in cooperation with these farmers.

- management specialist reviews results of survey and begins to list strengths and weaknesses.

- four day conference on role of credit unions - Provincial Chiefs and Divisional Chiefs of the Dept of Cooperation and Mutuality attended.

January, 1982: Management Specialist/Chief of Party submits pre-commencement assessment of credit unions.

SFPC specialist submits pre-commencement assessment of SFPC program

- Seminar plan for 1982 written.

- selection of 10 credit unions to be initial participants in the SFPC program (Nkon, Ngondzen, Banten, Ntundip, Babanki, Tungo, Santa Central, Tombel Town, Fiango, Kumba Town, and Njinikom.

- explored establishment of an Nso Vegetable Growers' Cooperative Association.

- met with farmers' groups to outline strategy for on-farm demonstration projects.

- attended to set up wheat marketing schemes, purchase and sale of inputs.

- 213 credit unions and discussion grousp have been analyzed in terms of economic viability.

- to date, 2 credit unions and 4 discussion groups have been liquidated. 4 credit unions were merged into 2 new unions.

- areas of instruction to be included in manuals identified.

February, 1982:

- one week seminar in Mamfe held from February 21-27 for 22 presidents, credit committee chairmen and bookkeepers.

- special meeting held among CAMCCUL senior staff to re-think League's approach to education.

- manual prepared which will serve both as a training tool and a reference for credit union officers.

- begin collection of data from credit unions to assist in identification of performance constraints and to be used in development of plan of action.

- CAMCCUL accounts officer participated in a one week ACOSCA seminar on central finance services in Nairobi.

- CAMCCUL risk management officer participated in a one week ACOSCA seminar on insurance in Nairobi.

- CAMCCUL manager and president participated in a management workshop in Togo.

- discussed training alternatives with an aim to utilize available project funds to train staff.

- gathered materials to begin process of putting together a credit union operating manual. Will continue to use existing seminar materials and various CUNA documents to build up a complete manual.

- Training handouts being re-written. Materials being formatted into transparencies.

- CAMCCUL Board selected 10 credit unions (from 20 analyzed) in initial stage of SFPC program.

- Sale and distribution of 600 kg of high yielding maize seed to members in 11 credit unions.

- Demarcation of each demonstration site and instruction to each participant on land preparation.

- In credit union training of farmer members on modern crop management, involving INADES and MINAGRI personnel. Topics included composting, tillage, crop rotation, and covered crops of maize, cassava, yams, irish potatoes.

March, 1982:

- one week seminar held for the South West Province presidents, bookkeepers, and credit committee chairmen.

- conducted credit union members on farm demonstrations of modern production practices on farms of 28 members in 5 SFPC credit unions.

- arranged for sale of Irish potato harvest of credit union farmers.

- began preparation of training materials for the SFPC component of the credit union workshop/training seminars.

- researched for institutions which could meet the credit union League's training needs.

Technical assistance team writes to WOCCU for guidance on baseline study, which they have not yet completed.

April, 1982:

-collection of baseline data from eight of the SFPC Credit unions to be used for project impact study and for trends survey analysis of each society.

- visited on farm demonstration projects, providing follow-up support for these in the form of phyto-sanitary applications.

- continued establishment of marketing structures and channels for the sale of farm commodities.

May, 1982: SFPC Specialist made several observations concerning productive loans. So far, less than 5% of loans distributed have gone to agricultural activities. In order to motivate farmers to apply for productive loans, the following innovations are being tested by the SFPC specialist:

1. Introduction of yield increasing technologies (fertilizers, pesticides, improved seeds) using the same plots.

2. Extension of land under cultivation without increase in cost of new technologies.

3. Marketing activities - higher price in market due to better quality of production, access to new markets.

4. Seed storage for multiplication.

- other institutions interacting in the SFPC program include:

FAO: Initiated a storage program in the project area.

HPI: distribution of exotic sheep.

MINAGRI: participation of extension agents in field demonstrations.

INADES: lectures on specific subjects including crop protection, soil improvement, etc.

CENEEMA: land preparation (tractor line).

Rural Training Centers (RTC)

SFPC specialist said coop/mut - which is dealing with cash crops does not directly interact in the program.

- Training of field workers, and SFPC credit union staff should start by July-August, 1982.

- Problems:

  1. SFPC specialist does not have a counterpart.

  2. No funds in project budget to build prototype silos for demonstration in each of the 10 SFPC selected credit unions

August, 1982:

- League's training staff have continued the credit union training courses through August.

- completed preparation of training materials for instructional use in the small farmer production credit program workshop/seminar.

- conducted 5-day training workshop for presidents, bookkeepers, and credit committee members of 10 designated small farmer production credit unions.

- CAMCCUL field worker accepted the position of agricultural officer and will assist in implementing the SFPC program when he reports to his new assignment on Sept 1, 1982.

Project Officer visited local credit unions to see how they operate and to discuss with teague officials certain project issues. Visited credit unions in Bafut, Bambili, Big-Bakank and Santa Central. SFPC demonstration sites were also visited .

Conclusions:

- League's viability rate of about 80% is encouraging;
- percentage of farming loans distributed low;
- no SFPC counterpart yet;
- CAMCCUL still wondering exactly what baseline data should be collected in survey.

- shift in SFPC technician's role from extension to advisor. As an agent for innovation, the SFPC technician is expected to reach community members new ways of investing their money during credit union meetings and seminars.

October, 1982: First visit by WOCCU/CUNA project officer to Cameroon.

October 23, 1982: First formal presentation of project progress by WOCCU/CUNA project officer to USAID/Cameroon Director.

January, 1983: First annual report submitted by WOCCU/CUNA

January-March, 1983: Field work for baseline survey completed by outside consultant.

April, 1983: In-house assessment completed.

April 23-30, 1983: Fieldworker seminars held in Mutengene.

18. EVALUATION RESULTS FOR COMPONENTS

18a. Training manuals

Three of the project's nine components are directly related to training. These include:

Component 1: Development of a membership education program

Component 3: Training of fieldworkers in central services

Component 9: Preparation of Manuals.

The CUNA - provided training specialist had not yet been hired by the time of the evaluation. As a consequence of his absence, the technical assistance team's chief-of-party spent a great deal of time during the first year-and-one-half of the project organizing training courses and supervising the preparation of training materials. He worked with Jonathan Nfonchin, the CAMCCUL training specialist Abraham Ndofor, the CAMCCUL manager and staff, and the SFPC specialist.

During 1981, CAMCCUL conducted 27 seminars. 25 seminars were held for the credit union officials and one for the league staff and for Provincial and Divisional Chiefs of Service for cooperation and mutuality. The seminars for credit union officials trained 223 book-keepers, 122 presidents of the Board of Directors, 144 members of the credit committees, and 56 credit committee chairmen, making a total of 545.

This represented 83% of target trainees envisaged for 1981. Topics covered in these seminars included book-keeping credit union management/administration, control measures and audits, risk management, loan granting and procedure, credit union loan policy, cooperative law, and credit union bye-laws.

From January 1 to December 31 1982, CAMCCUL organized 20 major seminars, covering a total of 539 trainees. These seminars grouped participants from the eight chapters of the league (Mezam, Mentchoum, Bui, Meme/Ndian, Manyu, Donga/Mantung, Littoral/Ouest, and Fako). Of these 20 seminars, 17 were credit union management seminars including 475 trainees, 1 S.F.P.C. seminar including 27 trainees, 1 league staff training course targeting 25 trainees, and 1 league Board of Directors course for 12 trainees.

The 472 trainees who attended seminars in 1982 represented 73.75% of the 804 trainees targeted. 74 book-keepers, 166 presidents, 112 members of the credit committees, 30 members of the supervisory committee, 25 members of the league staff, and 12 members of the league Board of Directors.

According to the Annual Report for year one, the following education targets were met during the first year of the project:

	actual
1. Society secretaries and assistants trained to maintain accurate and complete financial records and prepare financial statements	209
2. Society committee members trained to effectively direct society management including planning, production, loan analysis, etc.	239

Component 2: Expansion of the Production Credit Program

According to WOCCU/CUNA's firts annual report, the following are the results of the first year's activities and projections for the second.

	Year 1	Year 2
1. No. of SFPC credit unions	10	15
2. No. of SFPC credit union members	2,122	4,083
3. No. of SFPC credit union members borrowing for direct agricultural purposes	78	250
4. Average SFPC loan size (CFAF)	63,971	70,500
5. Total value of SFPC loans distributed (CFAF)	4,919,500	17,625,000
6. CAMCCUL staff trained in SFPC (person/days)	60	190
7. No. of secretaries and officers introduced to SFPC policy and procedure	652	250
8. No. of SFPC credit union officers trained in SFPC	567	650
9. SFPC borrowers/farmers trained (person/days)	334	150
10. No. of league loans to SFPC credit union	1	5
11. Aug. vlaue of league loans to SFPC credit unions (CFAF)	2,000,000	1,000,000
12. Total value of league loans to SFPC credit unions (CFAF)	2,000,000	5,000,000

18.e. Component 4: Consolidation of non-viable credit unions.

The objective to liquidate or merge all non-viable credit unions during the first two years of the project will not be achieved. Although the Chief of Party has studied the status of individual credit unions, according to WOCCU/CUNA's first annual report, this objective has been difficult to achieve for a number of reasons, as enumerated in the annual report:

> They include the legal requirement that a civil servant from the Department of Cooperation and Mutuality must be selected to supervise each action undertaken, the difficulty encountered in taking such action with societies in existence for long periods of time (especially "charter affiliates"), and, a sensitivity to the maintenance of ethnic and regional balances within the credit union movement.
>
> During the project's first year, four credit unions were liquidated and two were absorbed (merged) into other existing ones.

18.f. Component 5: Personnel Management

CAMCCUL is to develop and document a personnel system in the form of an employees' policies and procedures manual by the end of the second year of the project. Since the evaluation was conducted prior to this time, this project component was not evaluated.

18.g. Component 6: Planning Capability

As asserted in WOCCU/CUNA's first annual project report, "detailed planning, such as that envisioned by the end of the project, has not yet been undertaken in a formalized manner." The evaluation substantiated this assertion. It is anticipated that planning will be improved by utilizing a minicomputer; consequently, a feasibility study will be conducted by a computer expert at the end of year two.

18.h. Component 7: Development of national and regional structures

The unification of all Cameroonian credit unions through secondary bodies to a single national association is considered to be the most difficult objective of the project. This fact is due to the fact that CAMCCUL is a movement which grew largely in anglophone Cameroon, whereas the "Caisse Populaire" movement developed in francophone Cameroon. The unification of these two movements represents a microcosm of all the problems which Cameroon as a whole faces in uniting its diverse colonial heritages. However, some progress has been made to date in this endeavor in that leaders from each movement have met and begun a dialogue on possible collaboration in various areas. The movements developed from different initiatives. The Caisse Populaire movement started with Canadian assistance and has not been oriented toward loans.

The GURC supports greater cooperation between these movements. This attitude was shown in the four-day seminar held in the second quarter of the first year by CAMCCUL with all interested divisional and provincial chiefs of the Department of Cooperation and Mutuality.

18.i. Component 8: Shared Management Services

This component was not evaluated since there has been limited progress achieved to date.

Management/Monitoring

There have been problems in project management both on the part of CUNA/WOCCU and USAID/Cameroon.

CUNA technicians complained that they received little support from their home office. As a consequence, the USAID project officer wrote a letter to the CUNA/WOCCU Acting Director of programs recommending that CUNA/WOCCU schedule monitoring visits at least twice a year to make adjustments during the project implementation. In October, 1982, the CUNA/WOCCU project officer made his first trip to Cameroon and extensively briefed the Mission Director as to the status of the project. This briefing greatly reduced the tensions between USAID/Cameroon, the project, and WOCCU/CUNA which had arisen due to lack of communication. This lack of communication had led USAID/Cameroon to the decision to evaluate the project before the first scheduled evaluation because it was thought that the SFPC specialist was not performing his proper role, but was rather involved in too much extension work. This problem had in fact already been remedied, but due to lack of communication, USAID/Cameroon had not been informed.

Another major cause of a lack of communication was the baseline survey. The requirement to perform this survey was initiated by the AID/Washington project committee. Once the project team was in the field, they requested from USAID/Cameroon guidance on what data to collect by this survey. USAID/Cameroon could not offer any guidance and the project team floundered, collecting massive amounts of data not connected by any objective. The team complained to WOCCU/CUNA, and the decision was finally made to use an outside consultant. The misunderstandings caused by this baseline survey hindered project implementation, since almost a year elapsed before the consultant came to Cameroon, during which time project technicians futilely attempted to collect relevant data.

UNITED STATES GOVERNMENT

memorandum

DATE: August 3, 1983

REPLY TO ATTN OF: R Thompson, PDE

SUBJECT: P.E.S. for Small Farmer Livestock and Development Project (631-0015)

TO: B. Wilder, Acting Director

Attached for your signature is the subject P.E.S. which has been reviewed by I.R.Z., HPI, and the Mission.

Clearances: ARD:CPhelps
ARD:WLitwiller
PRM:HVaitaitis
A/D/DIR:SHandleman

Drafter: PDE:RThompson:ate

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) – PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Small Farmer Livestock and Poultry Development	631-0015	USAID/Cameroon

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 631-83-3

[X] REGULAR EVALUATION [ ] SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 3/80	B. Final Obligation Expected FY 84	C. Final Input Delivery FY 2/85	A. Total $ ____ B. U.S. $ 1,285,000	From (month/yr.) 3/80 To (month/yr.) 2/83 Date of Evaluation Review July, 1983

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
Action Decisions are detailed in Summary Section of P.E.S.		
Major Recommendations include:		
(1) AID, IRZ, and HPI should meet to revise implementation schedule and animal distribution targets.	G. Williams C. Phelps E. Tebong	10/83
(2) AID, IRZ and HPI should meet to agree upon job descriptions of HPI technicians and to assure that these technicians train counterparts and help improve station management.	C. Phelps G. Williams E. Tebong	10/83
(3) Management of Station Herd must be improved. Plan of action to do this must be drafted.	C. Phelps G. Williams E. Tebong	10/83
(4) An agreement of collaboration must be formalized with the Ministry of Livestock as soon as possible.	C. Phelps G. Williams E. Tebong	10/83
(5) IRZ must hire counterparts recommended by P.E.S.	E. Tebong	12/83

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- [ ] Project Paper
- [ ] Financial Plan
- [ ] Logical Framework
- [ ] Project Agreement
- [X] Implementation Plan e.g., CPI Network
- [ ] PIO/T
- [ ] PIO/C
- [ ] PIO/P
- [ ] Other (Specify) ____
- [ ] Other (Specify) ____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. [ ] Continue Project Without Change
- B. [X] Change Project Design and/or
  - [X] Change Implementation Plan
- C. [ ] Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Chris Phelps, USAID/Cameroon
Randal Thompson, USAID/Cameroon
Gerald Williams, HPI
Emmanuel Tebong, IRZ/Cameroon
William Kelso, Consultant

12. Mission/AID/W Office Director Approval

Signature: Bernard D. Wilder

Typed Name: Bernard D. Wilder

Date: 8/8/83

AID 1330-15 (3-78)

EXECUTIVE SUMMARY

Date: June 15, 1983

Project: 631-0015 Small Farmer Livestock and Poultry Project

Country: Cameroon

Period of Project: 1980 - 1985

I. What constraint did this project attempt to relieve?

This project proposes to relieve the constraint caused by low-protein consumption which leads to poor health and reduced productivity.

II. What technology did this project promote to relieve this constraint?

The project promotes improved breeds of livestock and poultry adapted to the Cameroonian environment. Livestock includes : cattle, goats, hogs, sheep, and rabbit. The project also promotes improved animal management practices.

III. What technology did the project attempt to replace?

The technologies being replaced are indigenous livestock and poultry which, though adapted to Cameroon, produce less than optimal levels of meat, milk, and eggs. Local "laissez faire" animal management practices are also being replaced.

IV. Why did project planners believe that intended beneficiaries would adopt the proposed technology?

Cameroonians were already doing research on how to improve their own breeds of livestock, so the initiative already existed. Livestock production is an old tradition and farmers now see it as a potentially lucrative enterprise and are thus motivated to adopt new technologies.

V. What characteristics did the intended beneficiaries exhibit that had relevance to their adopting the proposed technology?

Beneficiaries have adequate education levels to understand training concepts, interest in and motivation to manage small business enterprises, and adequate financial means to invest in businesses proposed.

VI. What adoption rate has this project achieved in transferring the proposed technology?

Farmers seeking improved livestock breeds far exceeds current capacity of the project to supply the breeds. Farmers who have improved breeds have been moderately successful; some animals were lost due to inadequate application of new management techniques, but farmers continue to learn.

VII. Has the project set forces into motion that will induce further exploration of the constraint and improvements to the technical package proposed to overcome it?

Yes, since the project is also helping Cameroon develop research capability, the constraint will be further explored and the technical package will continue to be improved.

VIII. Do private input suppliers have an incentive to examine the constraint addressed by the project and to come up with solutions?

Yes, there is room for input suppliers of feed, drugs, and livestock equipment to set-up private business. The success of the venture will ultimately depend on these suppliers.

IX. What delivery system did the project employ to transfer technology to intended beneficiaries?

Delivery system consists of training courses, extension follow-up and technical assistance to improve research protocols and animal management.

X. What training techniques did the project use to develop the delivery system?

Training techniques include in-service, long-term, and short-term courses and workshops. Farmers targeted for cattle receive three-months lecture-style training courses. Several paricipants are being sent to the United States for long-term training.

XI. What effect did the transferred technology have upon those impacted by it?

It is still early in the project, so that impact is not yet fully apparent. However, several livestock owners are beginning to get their enterprises running smoothly. Morning milk is being sold, and demand for the animal products is high.

SMALL FARMER LIVESTOCK AND POULTRY DEVELOPMENT PROJECT

MID-TERM EVALUATION

SUMMARY

A. Project Description

The Small Farmer Livestock and Poultry Project (631-0015) proposes to build a system through which small, limited resource farmers can obtain improved breeds of livestock and poultry that are adapted to the Cameroonian environment. After receiving training and animals, target farmers are expected to develop marketable dairy products, eggs and meat, thereby increasing the availability of protein to the general population.

The project is being implemented by Heifer Project International (HPI), a PVO with lengthy experience in the introduction of exotic breeds of livestock into developing countries. HPI is working with the Institute of Zoological Research (IRZ) of Cameroon's Delegation General for Scientific and Technical Research (DGRST) to develop the improved breeds of animals at three research stations, Bambui and Mankon, in the Northwest Province, and Wakwa in the North Province. HPI is providing exotic breeds of cattle, hogs, chickens, goats, sheep, and rabbits to these research stations for studies as to their adaptability to Cameroon as well as their potential for crossing with local breeds. Improved livestock breeds and crosses will be distributed to farmers who will receive training in their proper management, and extension services to assure their continued viability. Cooperative groups will eventually be developed and a distribution system for the various food products created.

B. Project Components

There are four project components which, together, work toward the achievement of project objectives. These include (1) adaptive research, (2) training, (3) livestock distribution, and (4) milk distribution.

C. Project Personnel

Five technical assistants have been provided by HPI, a Chief-of-Party, two small animal specialists, a dairy advisor and an agricultural economist.

D. Project Evaluation

A project evaluation was conducted in January, 1983, by an evaluation team composed of the HPI evaluation officer, a high ranking IRZ representative, a dairy consultant, and the USAID/Yaounde evaluation officer. The team traveled to the Northwest Province to conduct the evaluation. Only the dairy consultant visited the North Province. In addition, an agricultural economist and a poultry advisor, hired through BIFAD, conducted independent assessments of the poultry and agricultural economics components of the project.

E. Summary Evaluation Findings

General findings of the evaluation include:

E.1 Adaptive Research

There has been major progress made by IRZ in developing its livestock research capability during the last two years. IRZ has greatly expanded its staff, has increased its budget, and has constructed and equipped the research laboratory at Mankon, the swine facilities at the Mankon swine unit, and the milk technology section at Bambui.

There still are, however, certain constraints to the further development of an adequate research capability which should be addressed by IRZ. These include:

E.1a Management Level of Station Herds

The level of management provided to the station herds of dairy cattle and goats is not high enough to maintain good health and reproduction. The herds have low reproduction and high mortality rates, caused largely by the stress of malnutrition. The general poor condition of the herds renders them unsuitable as research subjects because the stress of malnutrition masks any treatment effects.

E.1b Feeding Facilities

The concentrate feeding system for lactating cows at the Bambui and Wakwa stations do not permit controlled measurements of individual cow consumption. Therefore, feeding concentrate levels according to milk production and conducting feeding trials on agro-industrial by-products cannot be accurately carried out. The design of the concentrate feeding facilities has been dictated by the milking system rather than by research.

E.1c Research Animals

There are currently an inadequate number of lactating animals (cows and goats) to conduct research trials which require milk yield as the performance measure. This problem is further compounded by having too many breeds which makes it difficult to differentiate between genetic and environmental effects.

E.1d Research Staff

Several of the IRZ research staff have either inadequate or inappropriate training to conduct the type of research under their purview. At Bambui, there is no one who has received any university training in dairy or animal sciences, and hence no one who is qualified to do research on genetics or animal nutrition. Only the milk technology research personnel at Bambui are qualified for their project responsibilities.

At the Wakwa Station, there is only one person who has the necessary formal training to conduct dairy research. However, his assignment as IRZ Chief-of-Station detracts from the amount of time he can devote to research.

At the small livestock research unit at Mankon Station, there is no full-time IRZ researcher for goats and sheep. Currently, an HPI technician is filling this role. The swine research capability at Mankon is adequate. Other researchers at Mankon, responsible for rabbit research, are well qualified for their responsibilities.

E.1e Experimental Design and Statistical Analyses

No scientific significance can be applied to much of the data being generated by the IRZ research stations because of an inadequate number of animals and poor experimental design. There are no individuals who are expert in setting research designs and in deciding the appropriate statistical analysis prior to commencing each research project.

E.1f Priority of Research Projects

The number and types of research projects approved by the statutory programs committee far exceeds the present research capability of the IRZ stations. The majority of projects listed for 1981-82 have not yet begun.

In spite of the fact that animal reproduction problems are one of the most serious types of problems facing the station and farmer herds, this area of research is not included in the dairy cattle and goat projects.

E.1g On-Farm Research Data

Further information on livestock adaptation, performance, and cost benefits could be obtained if livestock recipient farmers were taught records keeping procedures in their 3-month training course prior to receiving animals. Such records could include recorded data on health, reproduction, feeding, milk yield and sales and would greatly improve farmers' management skills.

E.1h Dissemination of Research Results

The present IRZ practice of reporting research activities in annual station reports reaches only a limited audience, primarily DGRST staff and administration. Other livestock agencies, such as MINEL, whose personnel are charged with farmer education and other groups which service farmers could also benefit from IRZ research information.

E.2. Training

The project is to provide a variety of long and short-term training courses to farmers, government workers, station personnel and others in topics related to the objectives of the project, including dairy production, practical training for veterinary students and agricultural students, or science training for IRZ technicians.

E.2a To date, 35 farmers have completed a three month training course in dairy production at Bambui station.

A total of 30 IRZ technicians have been given science training at Bambui; six ENSA agricultural college students and four Jalcari veterinary college students have received practical training at Bambui.

E.2b At Mankon Station, 25 farmers have received a three week training course in goat production and 3 students have received a ten day course in goat production.

26 farmers and 22 Peace Corps volunteers have received training in poultry production.

16 Peace Corps volunteers, 9 students and 2 IRA staff received training regarding several species in two ten and three week courses,

Off-station training courses were also held in goat production (98 participants), rabbit production (40 farmers) and goat, poultry and swine production (24 farmers).

Training manuals have been developed for all the above courses, which have exceeded project targets.

Seven long-term training positions were included in the project. Three individuals have already begun their graduate training in the United States in dairy husbandry, animal science, and poultry science. Long-term training is proceeding according to schedule.

E.3 Livestock Distribution

The distribution of improved breeds of livestock to target farmers is one of the major activities of the project. Ambitious targets were established in the OPG documents. Distribution goals to be met by mid-project, as well as actual distributed are:

SPECIES	PLANNED	ACTUAL
Poultry	105,000	86,300
Rabbit	1,500	99
Swine	1,000	437
Cattle	140	87
Goats	60	10
Sheep	20	0

The reasons for the failure to meet distribution targets include:

(1) The breakdown in the functioning of the Livestock Distribution Committee;
(2) The desire for IRZ to build up its herds to an adequate experimental size;
(3) Poor herd reproduction rates due to poor management and consequently an inadequate number of animals available;
(4) Setting of unrealistic goals based on an inadequate understanding of the organizational constraints;
(5) Delays in shipment of animals due to delays in project implementation;
(6) Animal loss due to acclimatization of animals; and
(7) Quarantine of swine due to outbreak of African Swine Fever.
(8) IRZ wanted to confirm adaptability of animals.

E.4 Milk Marketing

To date, a milk marketing system has not been established either in the Northwest or North Provinces. The reasons for the failure to establish this system include:

(1) The processing equipment at Bambui and Wakwa has not functioned throughout the project, and hence pasturized milk cannot be marketed as originally anticipated. Instead, raw milk is marketed. The operation of the processing equipment at Bambui was a condition precedent to disbursement of the project, and has not yet been satisfied in spite of the fact that the project is already at its mid-point.
(2) Since now milk is sold, there is milk spoilage and also a happenstance system of obtaining customers. A milk van picks up the milk of individual farmers and sells it to whomever the driver finds along the road.
(3) Only morning milk is sold.
(4) Raw milk has been sold from Wakwa station.

The Bamenda Dairy Cooperative is being established through which the dairy farmers can a-sure better control over the milk marketing system. The co-op has purchased its own milk van, and plans to gather the members' milk and sell it to the IRZ station at Bambui. Under this system, at least, farmers would not lose

due to milk spoilage caused by the negligence of IRZ. At this point, the markets for milk in the Northwest Province have not yet been tapped; demand greatly exceeds supply.

E.5 Poultry Management/Distribution

According to the BIFAD poultry expert, the poultry facilities built at Mankon are adequate, but will require a great effort to maintain and keep operational. (See Appendix E, pp. 2-3.)

Management at the station should be improved and should include:
(1) Debeaking of birds to prevent cannibalism,
(2) Improved maintenance of watering equipment and feeders,
(3) Reduction of the number of supervisors, and
(4) Increase in the number of researchers.

E.6 Economic Considerations

HPI's agricultural economist is charged with conducting on-farm analysis of the various project components as well as conducting an overview study of the economics of livestock production in the Northwest Province.

The agricultural economist has published three memos on costs and returns to:
(1) Small dairy farms in Northwest Cameroon,
(2) 100 then laying flock in Northwest Cameroon, and
(3) 2 and 4 Doe Dairy Goat herd in Northwest Cameroon.

The BIFAD agricultural economist offers specific comments on these budgets in Appendix F.

E.6.1 The BIFAD agricultural economist concluded that "the long-term economics do not, under any circumstances, favor a dairy industry in the Bamenda area." (Appendix F, pg. 4.) The major problem is that the relative prices between feed costs and milk prices does not favor a viable economic industry. Moreover, the quantity and quality of grain, concentrates and forage is extremely poor and, as a consequence, has a high price relative to the price of milk.

E.6.2 The evaluation team concluded that more farm level data is needed in order to understand the farming systems and the real potential of dairy, poultry, and small animal enterprises to the small farmer. A more detailed small farmer record keeping system is necessary in order to analyze changing production practices, additions and/or deletions of enterprises, alternative markets and capital purchases. (See Appendix F, pg. 4 and Appendix G.)

E.6.3 The evaluation team also found that IRZ sells a number of the animal products it produces below market prices, including table birds, live hogs, pork, day old chicks, and rabbits. This practice is counterproductive to the goals of the project. Farmers need incentives to produce; as a subsidized producer, IRZ is unfairly competing in the marketplace and thereby providing disincentives, (see Appendix H).

E.7 Organizational Considerations

HPI, IRZ, the Ministry of Livestock and USAID/Cameroon have somewhat differing objectives, which have created some difficulties for project implementation.

E.7.1. HPI is a grass-roots level organization which believes in the people-to-people approach to development. By making individual farmers more self-sufficient through the provision of dairy or meat animals, this church-supported PVO believes that it is making the surest contribution to the development of a nation. In general, the approach of HPI does not favor working through governmental institutions; its tendency in the project would be to distribute the animals as quickly as possible to the largest number of beneficiaries as possible, with an emphasis on farmer training and continued extension services.

E.7.2. IRZ, as a nascent research organization, sees the project as a vehicle through which to upgrade its research capability, obtain exotic animals, build up its herd to an adequate size to conduct statistically valid research, and obtain high visibility as a top-rated scientific organization within Cameroon. It's tendency in the project would be to build up the station herds to an adequate size, and to distribute only animals deemed unsuitable for research. The training of IRZ researchers as well as their identity within the organization mitigates against their conducting farm-level research or extending their findings to the individual farmer.

E.7.3. The Ministry of Livestock, although not a beneficiary of project inputs, was expected to collaborate with HPI and IRZ in extension activities. Unfortunately, the Ministry of Livestock is staffed largely by veterinarians whose orientation is to provide medical services and advice to farmers at provincial stations. They do not generally visit farmers and have no transportation to do so. As a consequence, they have been reluctant to formalize a relationship with the project which has meant that one of the conditions precedent of the project has not yet been met.

E.7.4. USAID/Cameroon's strategy would support the build-up of a research capability which included farm-level research, and which would be linked to the farmer via extension work toward the development of small-to-medium dairy and animal industries. USAID/Cameroon would favor institution building which would create organizations capable of serving beneficiaries.

E.7.5. These various organizational pulls create conflicts within the project and, given limited resources and time, could mean that none of the project objectives are achieved. Already, IRZ has held up animal distribution, arguing that they should build up research herd size. Consequently, they have jeopardized achievement of project distribution targets. HPI technicians have sometimes spent their time almost exclusively with small farmers, building up the farmer contact, but occasionally to the neglect of broader organizational goals.

E.8 Performance of the Technical Assistance Team

HPI provides five technical assistants for the project: a chief of party, a dairy specialist, two small animal specialists, and an agricultural economist. There have been some problems maintaining technical assistants and a consequent changeover of personnel. According to IRZ, the HPI advisors do not spend an adequate amount of time training Cameroonians in station management, nor have they made recommendations for improving station management. According to HPI advisors, they have had inadequate cooperation with IRZ personnel to play a stronger role in on-the-job training. The diverse orientations of IRZ and HPI seem to have made it more difficult to work out effective work relationships. IRZ has also complained that HPI does not keep IRZ adequately informed about project expenditures, and that they do not in general have an imput into purchase of commodities and other project items. (See Annex.)

F. General Recommendations

Given the findings of the evaluation team, it is the general recommendation of this evaluation that the project should focus more on the improvement of the management of the herds at the Bambui, Wakwa and Mankon stations. This focus should include improvement of feeding and reproduction management. The herds should be increased to a size adequate to conduct research. It should also be assured that each station has qualified animal managers who work for IRZ.

Animal management should, at this point, take precedence over research and distribution and extension activities. HPI should not pressure IRZ to distribute animals until management is under control. HPI technicians should work with IRZ on this task. Distribution targets during the project life should be revised accordingly. An agreement should be reached on distribution targets and a distribution mechanism created which will survive the project.

As a key aspect of improving station management, IRZ must fulfill the condition precedent for the project of providing fully operational milk processing equipment. A strict deadline must be set by USAID/Cameroon to accomplish this since no progress can be made in milk technology research or in the establishment of a milk marketing system until dependable equipment is in place.

HPI must also assure that the condition precedent to have a formal agreement between HPI, MINEL, and IRZ is satisfied. If the project will ever achieve its ultimate objective of providing limited resource farmers improved breeds of livestock and poultry, an extension component must be developed over the next two years. On April 7, 1983 the Delegué General for Scientific and Technical Research and the Minister of Livestock, Fish and Animal Industries, signed a joint statement which institutionalized a liaison between research and extension by establishing a regular committee meeting to be held every three months between the Provincial Services of the Ministry of Livestock and DGRST. (See Appendix K.)

HPI must present to this committee a proposal of agreement pertaining to The Small Farmer Livestock and Poultry Project, at the provincial level, and then present it to MINEL in Yaoundé.

It is unfortunate that USAID/Cameroon was remiss in allowing disbursement of funds before these two critical conditions precedent were satisfied. At this point, since funds have already been granted, USAID is not in a very strong bargaining position. However, it behooves USAID to play a predominant role in assuring that an extension component is built, since the realization of AID's program strategy in Cameroon will be severely jeopardized if this does not come about.

G. Specific Recommendations

The evaluation team makes the following specific recommendations:

Research/Management

G.1. Herd managers must be hired at each research station and be given formal training in herd management and livestock nutrition.

G.2. The milk-feeding system must be modified at the IRZ stations to conventional stalls with feed managers and basket type milking machines. This would permit each cow sufficient time to consume her feed allowance as well as to feed intake and milk yield on individual cows.

G.3. Greater emphasis must be placed on nutrition and reproduction in managing the herd. (See Appendix A, pg. 10.)

G.4. IRZ should recruit qualified personnel to fill their research positions as soon as possible. (See Appendix A, pg. 11.)

G.5. Dairy animals should be bred and redistributed to maximize their milk production. (See Appendix A, pg. 10.)

G.6. IRZ should employ a person trained in statistics and experimental design to provide guidance in setting up each research project and the statistical method of analysis. (See Appendix A, pg. 11.)

G.7. IRZ should put greater emphasis on prioritizing research projects in accordance with its capacity of personnel, station herds, and facilities as well as priority of need by the livestock farmers. (See Appendix A, pg. 12.)

G.8. IRZ should strongly consider extending its research data base to include on-farm information from farmer recipients. (See Appendix A, pg. 12.)

G.9. In addition to IRZ station annual reports, individual research reports should be produced and disseminated to a wider audience, including livestock extension and service personnel. (See Appendix A, pg. 12.)

G.10. A Cameroonian counterpart for the head of Small Animal Research at Mankon Station should be appointed as soon as possible. (See Appendix B.)

G.11. Protocols for on-farm research in cattle, sheep, swine, poultry and rabbits should be prepared on the model of the off-station goat research protocol. (See Appendix B, pg. 12.)

G.12. Uniform and current livestock inventories should be kept for all species, by breed, at each station. (See Appendix B, pg. 12.)

G.13. Forage at Bambui, Wakwa, and Mankon Stations should be better managed in order to assure animal well-being.

Milk Marketing

G.14. Milk processing equipment at Bambui Station must be made operational at once.

G.15. Maintenance crew must be available to maintain milk processing equipment.

G.16. Managerial assistance should be provided to the Bamenda dairy cooperative to assure that it becomes a viable institution.

G.17. Processed milk should be marketed via retail outlets.

Training

G.18. Mankon Station should develop an integrated training plan with one staff person serving as coordinator.

G.19. Continued emphasis should be given to off-station training.

G.20. Every effort should be made to enable participation of MINEL in extension training.

Animal Distribution

G.21. HPI, IRZ and USAID/Cameroon should meet to re-establish animal distribution targets. Agreement should also be reached as to the mechanism and targets for animal distribution following project completion.

G.22. The Distribution Committee should reiterate its position and responsibilities; IRZ should not be allowed to usurp them.

Agricultural Economics

G.23. The work of the agricultural economist can be made more meaningful if farm level studies are conducted and small farmer record books are kept in more detail. Specific recommendations are offered in Appendix G.

G.24. IRZ should seriously review its pricing policies to assure that it is not unfairly competing in the market place. (See Appendix H.)

Technical Assistance

G.25 IRZ and HPI should work out the job descriptions of the technical assistants together so that both organizations are satisfied with the role these technical assistants are playing. The technical assistants should be more concerned with improving station management and spend less time doing extension work. Moreover, these assistants should be providing more on-the-job training for their counterparts.

14. Evaluation Methodology

The evaluation was conducted as a mid-term, formative evaluation to determine whether progress had been made to date in the realization of project objectives, and also to determine, if any, modifications needed to be made in the project design, objectively verifiable indicators, assumptions, or implementation plan.

The evaluation team made a 2 week-long site visit to the project area, conducted interviews with project staff, IRZ researchers and staff, and farmers and reviewed project files. Unstructured interviews were used to obtain information from the target livestock farmers, who were selected randomly.

Those participating in the evaluation included:

Gerald Williams, HPI Chief of Party
Ronald Ruybal, IDI, USAID/Cameroon
Randal Thompson, Evaluation Officer, USAID/Cameroon
Armin Schmidt, Evaluation Officer, HPI/Little Rock
William Kelso, Dairy Consultant
Ndumbe IRZ/Yaounde

15. External Factors:

An outbreak of African Swine fever seriously affected the pig distribution component of the project. Although no swine fever has yet been officially reported in the Northwest Province, the Mankon station swine were put in quarantine and all breeding activities were halted. As a consequence of the quarantine, IRZ was unable to enlarge its herd, as planned. Moreover, the Northwest Province is still not entirely safe from swine fever; an outbreak, which could break out at any time, could virtually wipe-out the swine component of the project.

16. Project Background

In 1969, at the Bambui Agricultural Research Station, Cameroonian scientists began researching the potential of local breeds of cattle for milk production. The Research Station purchased a herd of 50 white Fulani females and two bulls. This local breed, although well adapted to its environment, proved to have very little potential as a milk producer. As a consequence, the Government of Cameroon requested Heiffer Project International to assist its dairy research by providing a better milk producing breed. In 1974, twenty-one Holstein-Friesien and Jersey heifers and one Jersey bull were shipped to the Bambui Station. An HPI dairy technician accompanied the heifers and spent one year at Bambui assisting in the care and adaptation of these cows to the tropical environment.

An agreement of scientific and technical cooperation was signed between ONAREST and HPI in July, 1976. An additional shipment of animals was made by HPI in September, 1976. This shipment included 38 Holstein and Jersey dairy heifers, 36 pigs, and 38 goats. A shipment of 2,200 day-old chicks was received in December, 1976.

Prior to the signature of the current OPG, six HPI technicians had worked in Cameroon: three as dairy advisors at Bambui, two veterinarians, and a small animal technician at Mankon.

Pre-OPG accomplishments included:

16.1. 44 farmers trained in livestock management.

16.1. 6 trainees attended 12-week dairy course at Winrock International Research and Training Center, and eight weeks of on-the-farm training at selected dairy farms.

16.2. Following livestock and poultry were distributed:

(a) 3000 hatching eggs.
(b) 80 breeding chickens
(c) 11 breeding cattle
(d) 167 breeding pigs
(e) 7 breeding goats

16.3. 15,000 table eggs and 845 table birds were marketed to consumers in surrounding areas, as well as meat from 27 pigs and 7 goats.

17. Objectives of the Operational Program Grant

17.1 The Purpose of the OPG to HPI for the Small Farmer Livestock and Poultry Development Project is to provide a system through which small, limited-resource farmers can benefit from the development of improved breeds of livestock and poultry that are adapted to the Cameroonian environment. A secondary objective of the project is to increase the availability - at a reasonable cost - of dairy products, eggs, and meat.

17.2 To support this purpose improved breeds and crosses of dairy cattle, small livestock and poultry will be developed; research workers, extension workers and farmers will be trained in appropriate aspects of livestock and poultry management; a system to distribute the improved livestock and poultry to small, limited-resource farmers and cooperative groups will be developed; and the distribution system for the resultant food products will be expanded.

17.3 The four major project components are: (a) adaptive research, (b) training, (c) livestock distribution, and (d) milk distribution.

17.3.a Adaptive Research will be conducted on improved varieties of livestock and poultry; the nutritional value of local agricultural by-products (such as maize, rice bran, and brewers dried grains) for use in food stuffs for livestock and poultry; and the prevention and control of diseases and pests.

17.3.b Training will include in-country short-term training programs in small livestock, poultry, and dairy management; and long-term graduate level training for seven persons in the United States.

17.3.c Livestock will be distributed by the project as follows:

	1	2	3	4	5	Total
Poultry	15,000	30,000	60,000	100,000	150,000	355,000
Rabbits	300	500	700	900	1,000	3,400
Pigs	100	300	600	600	600	2,200
Catle	20	40	80	100	120	360
Goats	0	20	40	50	100	210
Sheep	0	0	20	40	50	110

17.3.d Through a milk distribution system, the project hopes to initiate a dairy industry in Cameroon. Milk will be distributed from the dairies at Bambui and Wakwa, where milk processing equipment has been installed. Raw milk will be purchased from the farmers, pasteurized and packaged at the research stations and sold to customers along the main roads or to retailers in the surrounding towns.

17.4 The End of Project Status will include the following accomplishments:

17.4a There will be an established though nascent dairy cattle, small livestock, and poultry industry in Cameroon, which will involve a distribution system to provide improved livestock and poultry to small, limited-resource farmers and cooperative groups.

17.4b There will be a functioning livestock and poultry research unit with an ongoing program of research in breeding nutrition, and disease and pest control.

17.4c There will be an increased number of small farmers raising improved breeds of livestock and poultry for subsistence needs and for sale.

17.4d There will be greater availability of meat, eggs, and dairy products to the people at a reasonable cost.

17.4e The small farmer will have access to formulated rations (locally produced), breeding services, and marketing systems.

18. Measurement of Project Achievements

HPI proposes several objectively verifiable indicators to measure the achievements of their project. These include:

18.1 Distribution targets for animals (see 17.3c).

18.2 Training: 375 persons will have received training in dairy cattle management and small animal husbandry. These persons will include researchers, extension workers, and farmers. Seven persons will have received long-term graduate level training.

18.3 4.5 million liters of cow's milk will be processed during the project life.

18.4 There will be an increase in the consumption and sales of livestock, poultry, and eggs, and goats milk.

18.5 Three feed mills will be in operation, and research and training in pasture management will be underway.

19. Institution Building

The project is assisting the Institut de la Recherche Zoologique (IRZ) of the Delegation Generale de la Recherche Scientifique et Technique (DGRST) establish itself as a viable organization producing high quality research. The project will directly assist three existing IRZ research stations: Bambui, Mankon, and Wakwa. Major construction will be undertaken at Mankon.

The project receives 67% of its support from the Cameroonian government. The government has assigned personnel to the three research stations, provided land and buildings for the stations, and provided station expenses. Cameroon's budgetary allocation for IRZ has increased significantly over the last few fiscal years. As a consequence, there is a great potential for significant institution building. The Director of IRZ is an extremely dynamic individual who sees the project as an effective bargaining tool to increase the GURC budget commitment to his institute.

20. Beneficiaries

The direct beneficiaries of this project are small farmers of the Northwest Province, who will be assisted to establish milk, meat, and egg production ventures. A key beneficiary is also the Institute of Zoological Research which is being assisted by project activities to become a viable research institution. Indirect beneficiaries included the general populace who will have increased access to protein. According to IRZ, the direct beneficiaries in the North may well be larger, more well-off livestock farmers. This phenomenon, they say, is due to the social structure, which precludes small farmers from having adequate land or other resources to support a dairy herd. A farmer must have adequate land to grow forage to feed his cattle. There is a rather high opportunity cost to growing forage because the farmer must take land out of alternative production. This generally entails growing less food crops.

21. Chronology of Implementation Events

Pre-project Activities:

Sept. 23, 1977 HPI shipped 42 heifers, 41 milk goats, and 36 pigs to Cameroon.

Jan., 1977 Exchanges between HPI and ARD at USAID/Cameroon regarding possible project.

March, 1977 Serious constraint to success of proposed project was identified, that of a lack of operating expenses at the Wakwa, Bambui, and Mankon stations. Lack of operating expenses caused lack of feed; personnel were not being paid their salaries; and hence there was a negative impact on the animals and their ability to survive, produce, and reproduce. HPI requested assurance of the senior levels of the Cameroonian Government that these matters would be taken care of prior to commencement of project.

March, 1977 HPI puts pressure on IRZ and MINEL to agree to a larger distribution target under proposed OPG. (Yaounde 79-3828).

May, 1979 In a memo, Douglas W. Butchart AID/W livestock specialist warns that genetic difference (and hence the need to import exotic breeds) has less impact on milk yield than level of feeding and management. (20% as compared to 80%). He recommended artificial insemination as a method of upgrading stock, rather than importation of exotic herds.

December, 1979 Mission ECPR held.

March, 1980 Cameroonian hired to assist HPI dairy advisor, to deliver feed to farmers and perform artificial insemination.

Mankon Station: HPI dairy advisor reports that problems at Mankon station are critical. Protein, vitamin, and mineral supplement was not in stock for 5 weeks; egg production dwindled to nothing. Goats are diseased and mortality rate is high. Milk production extremely low. Goat housing is inadequate. Poor nutrition, contaminated facilities, and many ticks.

Bambui Station: HPI dairy advisor reports that station is running alright with some problems noted in shortages of feed, pastures, forage conservation practices, and calf feeding program. New milking parlor not yet in operation. Many equipment failures.

Wakwa Station: HPI dairy advisor recommends that there should be an HPI advisor at Wakwa.

April, 1980 OPG with Heifer Project International signed.

June 29, 1980 Burwells and two of the proposed project technicians arrive in Yaounde.

July, 1980: HPI advisor asserts that adequate preparations have not been made at Bambui and Mankon stations for a new shipment of exotic animals from the USA. Livestock shipment delayed until early, 1981.

At Mankon station, all four livestock enterprises facing problems due to housing and/or management problems (lack of water, feedstuffs, etc.) Recommended that goat section be rebuilt and fenced in (this has never been done).

Distribution committee formed, consisting of representatives of HPI, IRZ, and the Ministry of Livestock.

Training Programs to begin in August, 1980.

Prerequisites for receipt of exotic animals include:

a) cows being milked in the new dairy barn;

b) milk being processed and delivered daily;

c) no more milk dumped or wasted;

d) adequate supply of corn silage for new cattle;

e) adequate harvest of good quality hay for dry season;

f) assurance that the budget will allow for an increased supply of feed grains and supplements;

g) animal distribution plan implemented as approved by HPI, DGRST, and AID.

July, 1980 Pre-requisites established for receipt of animals:

a) Farmer to be approved for training.

b) Farmer to successfully complete training.

c) Farmer to have proper facilities and preparation.

d) Farmer to pay "affordable prices.

July, 1980: HPI seeking Chief of Party for Cameroon.

August, 1980: Director of IRZ announces that the Ministry of Livestock agrees to cooperate with IRZ/HPI in the distribution of animals.

September, 1980: HPI Dairy Advisor reports to USAID as to status of conditions precedent.

a. Milk pasteurization equipment working intermittantly. Problems in electrical wiring and milk cooling system.

b. Milk marketing system not functioning well due to transportation problems.

October, 1980: Meeting at IRZ office Mankon-Bamenda with IRZ. Discussions included:

a. Distribution: Farmers desiring animals should be placed in order on lists.

b. Recruitment: Need for more workers due to gap created by workers who left for training.

c. Transport problem: Need more vehicles.

d. HPI small ruminant advisor recommended fencing for goats to better control their eating and breeding functions. (Note*: as of evaluation in 1983, fencing still had not been built.)

e. Incubation: Need for technician to handle incubation. Often individuals turn off incubators and eggs do not hatch. Incubation was finally stopped altogether.

October, 1980: Director of IRZ approves distribution plan.

HPI small ruminant advisor arrives.

Frenchman sent to Bambui station by DGRST. He greatly improves mangement practices.

February, 1981 HPI dairy advisor summarizes accomplishments for 1980.

a. Livestock Distribution:

a.1 seven farmers received a total of 12 cows; two religious missions received 4 cows;

a.2 4 religious missions approved to receive 10 cows; farmers approved to receive 6 cows.

b. Training: 12 farmers completed 12-week dairy management course.

c. Extension: As number of farmers increases, it is difficult to keep up with farm visits. HPI small ruminants advisor working on dairy extension.

Farmers doing acceptable job managing herds; tick diseases causing some problems. Experimental, off-station artificial insemination program has begun.

Dairy farmers have had their animal health needs met by veterinarians and drugs from Bambui station. However, station will not be able to meet these needs in the future.

Farmers with cows and those interested in getting cows meet compounds. HPI and IRZ staff give refresher training at each meeting. Group of farmers will be the nucleus of a milk producers cooperative.

d. Bambui Station:

d1. Milking parlor began working in August, but there still are problems with milk processing equipment.

d2. Milk sales improved but consumers complaining of warm or spoiled milk.

d3. Reproduction of cattle on station needs to be improved to supply more cattle for distribution and to increase milk production. Poor pasture conditions, poor heat detection. Milk production lower than it should be. Calves' growth stunted due to warms. No vaccines available.

e. Cooperating Organizations. Cooperation between IRZ, HPI, and the Ministry of Livestock improving. MINEL veterinarians not able to help farmers on location due to problems of transport and availability of drugs.

f. Benefits: Farmers are seeing their children become healthier through having a constant supply of milk. Missions giving milk to the malnourished.

February, 1981 New HPI Chief of Party arrives.

June, 1981 HPI sends shipment of livestock including 84 cattle, 50 rabbits, 57 sheep, 36 pigs, 63 goats, and 4,400 chickens.

July, 1981 Farmer complains that MINEL veterinarian takes his money, but doesn't cure his swine.

April, 1982 New ARDO of USAID/Cameroon makes following observations on project:

a. IRZ leadership tends to place emphasis on development of the station, rather than distribution.

b. Land may be a limiting factor to the expansion of the project, since farmers are generally small and cannot therefore grow enough forage to keep many cattle.

c. Pastures are not of a very good quality, acidic soil prohibits leguminous forage.

d. Project has one extension agent on the HPI pay roll.

e. Poor roads, lack of transportation and poor market conditions limit development of a large scale dairy industry.

f. A simple milk record and farm income and expense record book has been developed for 20 farmers who now have dairy cows. Farm budget has been developed for two and four cow herds and raising of poultry to laying age.

August, 1982 African swine fever outbreak. Mankon station swine quarantined and breeding program halted.

November, 1982 Livestock distribution: 20 farmers have cattle; 6 missions have cattle.

December, 1982 World Bank mission studied IRZ and made following recommendations/conclusions:

a. IRZ relatively new institution, considered to be less organized and less effective than IRA. Emphasis on establishing new research centers instead of maintaining and upgrading existing facilities.

b. Team suggested scientific reprograming of IRZ's directions and research priorities and consider livestock systems research.

c. IRZ management mediocre; lack of inservice training for IRZ technicians.

December, 1982 Protocal for off-station research for dairy costs developed. Summary of dairy program given:

a. Approximately 150 persons have participated in introductory training courses for dairy and local goats. 18 have completed internship at Mankon station.

22. Evaluation of Project Activities

The following annexes evaluate the major project activity areas: adaptive research, training, animal distribution, and milk marketing. The poultry component and the agricultural economics components are also evaluated. Annex H is the report of the forage agronomist on how to improve forage for the livestock. Annex L is the report of the departing HPI dairy advisor which presents a thoughtful analysis of project achievements.

APPENDIX A

EVALUATION OF THE ADAPTIVE RESEARCH COMPONENT OF THE CAMEROON SMALL FARMER LIVESTOCK PROJECT NO. 631-0015

Dr. B.F. Kelso - U.S.D.A. Dairy Specialist, Tunis

January, 1983

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Appendix I - Formal Scientific Training Received by IRZ Research Personnel

EVALUATION OF ADAPTIVE RESEARCH COMPONENT OF THE CAMEROON SMALL FARMER LIVESTOCK PROJECT NO. 631-0015

Dr. B.F. Kelso - U.S.D.A. Dairy Specialist, Tunisia

This evaluation of the research component of the Small Farmer Livestock project is an attempt to determine whether the research activities are actually being directed toward the project's stated purpose, how such activities are being carried out, and the results obtained thus far. The intent of this mid-term progress evaluation is to identify any major restraints, examine their causes, and finally to suggest recommendations which would strengthen the effectiveness of this project component.

The first section of this evaluation is a review of project documents which state the project's purpose, the methods to be followed in conducting the research and what results are expected by the project's termination date. The primary sites for conducting the research are located at the Bambui, Mankon, and Wakwa research stations. The primary agency responsible for conducting the project's research is the General Delegation for Scientific and Technical Research (DGRST). The livestock component of this agency is the Institute for Animal Research (IRZ). Supporting parties in this project include Heifer Project International (HPI) and the U.S. Agency for International Development (USAID).

I. Purpose of Small Farmer Livestock Project.

The stated purposes for conducting this project as taken from the Statement of Work are:

A. To provide a system through which small, limited resource farmers can benefit from the development of improved breeds of livestock.

B. A secondary objective is to increase the availability (at a reasonable cost) of dairy products, eggs, and meat.

II. Methods to be used.

The stated methods to be used in conducting the livestock adaptive research are:

A. Local Cameroon breeds of livestock will be collected at the research stations and used as a gene pool for crossbreeding to improved exotic breeds.

B. Adaptation trials will be conducted on the imported breeds and crosses.

C. Additional research will be conducted on the nutritional value of local agricultural by-products for use in livestock rations as well as on the prevention and control of livestock diseases and pests.

D. The DGRST will continue the development of its livestock research capability.

E. The DGRST will monitor the distribution of improved animals to area farmers in order to assess the cost benefits of livestock production in farmer field trials.

III. Results expected by end of Project.

The Small Farmer Livestock Project has a five year duration according to the project documents. Thus, the time period under consideration extends from the fiscal year 1980-81 to 1984-85. The results expected by the end of the Fifth year (1984-85) are as follows:

A. There will be an established, though nascent, dairy and livestock industry in Cameroon with a distribution system to provide improved livestock to small farmers and cooperative groups.

B. There will be a functioning livestock research unit with an ongoing program of research in breeding, nutrition, and disease-pest control.

C. The small farmer will have access to formulated rations (locally produced), breeding services and marketing systems.

IV. Time Schedule for Research Activities.

The project's progress may be evaluated at this time by reference to the stated activities scheduled during the first two years of operation:

A. First year (FY 1980-81)

1) DGRST - Develop livestock research program; plan and construct livestock buildings; and identify participants for overseas training.

2) HPI - Recruit technicians for technical advisory positions (dairy advisor at Bambui and small animals advisor at Mankon); arrange for shipment of livestock and drugs; plan and construct laboratory and office complex (Mankon); and arrange for long-term training for selected participants at U.S. institutions in collaboration with AID.

B. Second year (FY 1981-82)

1) DGRST - Identify additional participants for short and long term overseas training; plan and construct more livestock buildings.

2) HPI - Recruit technicians for technical advisory positions; purchase drug supplies; and evaluate progress of project.

The above sections of this report I-IV provides formal guideline for evaluating the research component of this project. The approach followed by the evaluation team in addressing the research progress made to-date included a review of the project's official documents and correspondence; visitation of the research stations; interviews with research staff; and a review of research publications and annual reports.

The following sections of this report are directed toward the findings of the evaluation team and its suggested recommendations.

V. Research Progress to-date.

A. Progress toward development of a livestock research Capability.

The capability of an institute to conduct valid livestock research is highly dependent upon its scientific expertise of staff personnel, the availability of sufficient numbers of animals, and adequacy of facilities and equipment. These components were examined by the team in its assessment of IRZ's current capability to conduct valid livestock research.

1) Credentials of IRZ Research Personnel.

The formal scientific training of research personnel who are conducting research at the Bambui, Mankon, and Wakwa IRZ stations was examined. The specialization and level of graduate training was considered in relation to the type of research projects they were each responsible for conducting. The training received by each researcher is listed in Appendix I. Evaluation comments on the training level of researchers in relation to project responsibilities are made as follows:

a) Bambui Station - Dairy Research

There were 12 projects in genetics, nutrition and milk technology listed in the IRZ programs of research. These projects were all listed under the direct charge of Mr. Mbanya with the assistance of two technicians, Mr. Njong and Mr. Djime. No research staff member of the Bambui station has any graduate training in dairy or animal science related to genetics or animal nutrition. Thus, the development of dairy cattle research capability at this station is seriously hampered by lack of specialized training of station personnel. The degree of supervision and coordination of dairy cattle research which can be offered by Mr. Mbah, who does have adequate training, but is serving as Chief of the Wakwa station is questionable because of the great distance separating these stations.

The milk technology research personnel at Bambui, especially Miss Tiku and Mr. Libouga, appear to be well qualified for their project responsibilities.

b) Wakwa Station - Dairy Research

There are 7 projects listed by IRZ at Wakwa. They are directed to studies on nutrition, genetic performance, milk technology, and economics. Only one person, Dr. Mbah, has the necessary formal training to conduct serious dairy research. His M.S. and Ph.D degrees in Animal Science with specialization in genetics and

reproduction give him excellent credentials for assuming leadership responsibility. However, his assignment as IRZ Chief of Station detracts from the amount of time available for research. The research capability at this station could be significantly improved by assigning additional research personnel with qualifications in ruminant nutrition, reproduction, milk technology, and dairy economics.

c) Mankon Station - Small Livestock Research

There were 7 research projects in goats/sheep and 11 projects listed for swine by IRZ for 1981-82. The goats/sheep project does not have a full time research position filled by an IRZ employee. One project was assigned to the Chief of Station, Mr. Ndamukong; another to Dr. Fomunyan who is in charge of the new research laboratory; and 5 projects were assigned to Mr. Howell, who is an HPI small livestock advisor.

Until IRZ assigns a full-time professionally trained person to provide leadership to the goats/sheep project, no long-term research capability will be developed in this program.

The swine research has just recently been assigned to the leadership of Mr. Fombad, who has both B.S. and M.S. degrees in Animal Science. Therefore, the swine research capability is considered adequate.

d) Research Laboratory - Mankon Station

This research laboratory complex has just recently been constructed and the analytical equipment installed. The personnel selected to operate this lab appear to have very good qualifications as evidenced by their specilized training (see Appendix). Dr. Fomunyan is believed to be especially well qualified as head of the laboratory.

2) Livestock numbers for Conducting Research.

The number of animals available for research determines not only the number of projects but the type of studies which can be researched. If the number of animals is too limited, there can be no statistical significance applied to the results. Thus, the research will have no validity and, most often, conclusions will be misleading with detrimental consequences.

Research which is intended to associate animal performance with specific treatments or genetic differences is especially vulnerable to error when inadequate numbers of animals are utilized. This is because there are so many environmental variables which influence animal performance, especially milk yield. Whenever there is a greater variation in performance within a treatment (or within a breed) than there is between different treatments (or between breeds), there can be no significant cause-effect relationship attached to the research

results. These points are being emphasized because IRZ does not have the number of animals available to match its research ambitions at this time. A review of animals available at each station is presented as follows:

a) Bambui Station - Dairy Cattle Research

A review of the number of cows in lactation during each month of the 1981-82 project year varied from 13 to 25 with an average per month of only 19.1. The significance of this small number of milking cows is further reduced by there being four breed groups represented as follows: 9.8 Holsteins, 5.1 Jerseys; 2.0 F_1 Hostein X Red Fulani, and 2.3 F1 Jersey X white Fulani.

This genetic diversity when combined with differences in age and stages of lactation makes it impossible to select balanced groups for conducting valid nutrition research. By the same token, the numbers are completely inadequate for making valid genetic comparisons of breed performance.

There were six research projects in nutrition and genetics that were planned by IRZ for 1981-82 using this small number of cows. In reality, there were not enough cows in lactation to conduct even one of these projects.

It should be pointed out that the herd inventory for July 1982 showed 73 cows. This, if only 30% of these cows are lactating at any given time, it would indicate there are serious problems in managing their reproduction schedule. No research project at Bambui is directed to the study of reproduction.

b) Wakwa Station - Dairy Cattle Research

As of June 30, 1982, there were 35 cows in the dairy herd at Wakwa. Their breed composition was 7 Holstein, 7 F1 Holstein X Gudali, and 21 Montbeliard-Gudali crosses. The latter group includes both F1 and F2 generations. The same situation at Bambui exists at Wakwa regarding the inadequate number of lactating cows for conducting research. Reproduction problems, which can be associated partly with mismanagement of frozen semen and changes in inseminators, have had a contributing role in affecting the size of the research herd. The total dairy herd has decreased from 125 in 1979/80 to 94 as of June 30, 1982. The mortality rate at Wakwa has also been exceeding high. In this case, it is of interest to note that of 36 diagnosed mortalities during 1980/81 and 81/82, there were 21 listed as "undetermined causes".

It is readily apparent that the feeding and management of this station herd needs to be greatly improved before any research can be seriously considered.

c) Mankon Station - Small Livestock Research

The latest inventory of the goat herd (June 30,1982) showed the following number of does of the dairy breeds: 13 Toggenburg, 19 Nubian and 15 Saanen. In addition, there were 43 indigenious does of the Rousse and local dwarf breeds. It was noted that of the dairy breeds, the Nubian lactations lasted less than two months compared to 5-10 months for the Toggenburgs and Saanens. A serious abortion problem afflicted half of the dairy breed does. (Lactation records initiated by abortion are considered abnormal in official testing programs).

This, the problems of short lactations and abortions seriously limit the number of does available for research trials which utilize milk yield as the measure of treatment effects. It would be impossible to actually conduct the six planned projects which were scheduled for 1981-82 on utilization of by-product feed, levels of management, adaptability, and type of milking stalls.

The swine herd at Mankon on June 30, 1982 consisted of 315 head. The number of sows in each breed was: 15 Berkshire, 5 Duroc, and 14 Landrace. Inasmuch as there can be two farrowings per sow per year, and growth rate of the pigs is used as the primary measure of performance it would appear that the number of swine available for research is adequate.

3) Facilities for Conducting Research

a) Bambui Station - Dairy Research

The IRZ 1981-82 research projects at Bambui include three proposed studies on the utilization of agro-industrial by-products as concentrate supplements and a comparison of three types of forages. To conduct such trials, cows must be separated into treatment groups with separate feeding facilities provided. The facilities must provide a means for measuring feed intake. Such facilities do not exist at this station. All cows are fed forage form one single bunk located in one paddock. The concentrate feeding system in the milking parlor (double-2 side opening) does not provide an accurate means of measuring actual consumption by individual cows and intake is limited by the speed of milking. Thus, the total feeding facilities are improperly designed for conducting any nutritional studies.

There are five IRZ projects listed on milk technology which were to commence in 1982 at the Bambui station. They are all still being delayed because the processing plant has not functioned for nearly two years due to difficulty in replacing a faulty valve in the plate cooler. In addition, the testing laboratory is still waiting for ordered equipment. Lack of appropriate equipment has prevented these project being implemented, even though qualified personnel were hired months ago.

b) Wakwa Station - Dairy Research

New facilities are nearing completion at the Wakwa station for milking the herd and for processing the milk. The processing facilities appear to be satisfactorily designed for conducting milk technology studies. Research control over concentrate consumption in the milking parlor is completely lacking in the new facilities. Even though this station is closest to the northern sources of agro-industrial by-products, the feeding of such products has been ignored in the design of the feeding system.

c) Mankon Station - Small Livestock Research

The current facilities for feeding the goat herd are inadequate. The herd is permitted on pasture only 8 hours out of 24 and there are no facilities for controlled feeding of stored forages during the other 16 hours. The animals are exceedingly thin due to this lack of feeding facilities. The high incidence of health problems and the low yield of milk clearly traces to improper nutrition resulting from the restraints imposed by lack of feeding facilities.

The facilities for swine research appear to be adequate. Enough group pens with feeding facilities are provided in the new construction to permit good control and measurements of research.

d) Research Laboratory - Mankon Station

This laboratory complex is subdivided into specific laboratory functions of nutrition, Biochemistry, Histology, Pathology, and microbiology. Each lab seciton has the latest type of highly sophisticated testing equipment. It is truly a modern laboratory that has a tremendous future capability for accurate research analyses.

In summary, the development of a livestock research capability by IRZ has not yet reached all acceptable level in all categories. There is still a great need for improvement in the scientific training level of the research personnel (except for the Mankon research lab.).

A need for larger numbers of research animals (except swine), a need for improved management of the station herds and a general need for improved research facilities (except for the Mankon Research Lab.). The foregoing critical assessment of these research categories is not intended to discourage but to focus on specific weaknesses which hopefully can be improved.

B. IRZ Mechanism For Selecting Research Projects.

Based on the guidelines set by Government through DGEST the Institute of Animal Research requests its researchers in the field, who are familier with the problems of their local milieu to suggest research projects for any one year within the approved programmes of research. The researchers, each in his field

of specialization, submit proposals with estimated costs to the Director of IRZ. The proposals are studied critically by the Research Service of IRZ in accordance with national priorities and scientific interest. The selected projects are then compiled into a document and submitted to the Delegate General for Scientific and Technical Research where they are deliberated upon by a statutory Programmes Committee Chaired by the Director of Programmes at DGRST. This Committee may delete projects or recommend the inclusion of new operations depending on national needs, as it considers necessary.

IRZ then revises its research proposals in accordance with the recommendations of the Programmes Committee and prepares the proposals into another document to be finally deliberated upon the Board of Directors of IRZ. The Board of Directors has the final say on both the research operations (or projects) and the research budget. It is Chaired by the Delegate General for Scientific and Technical Research and the proposals it approves become the research operations for IRZ for the year.

It may be noted that in a number of cases, research projects are requested by other Institutions such as the Ministry of Animal Breeding, (MINEPIA) the Livestock Corporation (SODEPA) and the University Center Dschang with all of whom IRZ maintains close cooperation. If the projects get the formal approval of the Programmes Committee and the Board of Directors they are inscribed in the IRZ research Programmes and executed for, or by researchers of the Institutions as in the cases of University Centre Dschang and the University of Yaounde.

C. Research Results to Date

The research topics addressed by IRZ in its program listing can be summarized as:

1) Adaptation trials conducted on exotic breeds and crosses
2) A study of the nutritional value of agro-industrial by-products
3) Prevention and control of diseases
4) Cost-benefits of livestock production in farmer field trials
5) Milk technology to improve milk quality

As yet, there have been no research papers published on any of these topics by IRZ personnel at the Bambui or Mankon stations. The only indication of reporting has been herd-status and management-type progress reports in the station Annual reports. No true scientific research results have been produced at this time.

There has been definite action by Dr. Mbah of the Wakwa station to publish some scientific papers. During 1982, the following reports were issued:

1) D.A. Mbah. 1982. Note on the influence of season on milk yield at Wakwa. Sc. Tech. Rev.2 : p. 145-148.
2. D.A. Mbah. 1982. Mortality due to rickettsia, trypanosomiasis, piroplasmosis and streptothricosis among six genetic groups of cattle at Wakwa. Sc.Tech. Rev.2 : p. 81-84.

3) D.A. Mbah. 1982. Adaptation of dairy cattle to Wakwa. 1: Resistance to cattle ticks Sc.Tech. Rev. 2, p. 101-106.

VI. Major Research Constraints and Proposed Recommendations.

Without question, there has been major progress made by IRZ in developing its livestock research capability during the last two years. Especially noteworthy accomplishments include constructing and equiping the research laboratory complex at Mankon, the swine facilities at Mankon, and the milk processing facilities at Wakwa. Progress has also been made in expanding the research staff by employment of personnel with high qualifications at the Mankon Research laboratory, the Mankon swine unit, and the milk technology section at Bambui.

There are, however, certain constraints to further development which should be addressed by IRZ. It is with a constructive spirit that these constraints are identified and proposed recommendations made. Their consideration will hopefully bring about a further strengthening of livestock research in Cameroon.

A. Management level of station herds.

As a general condition, the level of management provided to the station herds of dairy cattle and goats is not high enough to maintain good heath and reproduction. The stress of malnutrition is one of the greatest factors contributing to low reproduction and high mortality in these herds. The general poor condition of the animals renders them unsuitable as research subjects because the stress of malnutrition masks any treatment effects.

Recommendation - Steps be taken to employ herd managers at each station who have received formal training in herd management and livestock nutrition.

B. Feeding Facilities

The concentrate feeding system for lactating cows at the Bambui and Wakwa stations (new facilities at Wakwa) do not permit controlled measurements of individual cow consumption. Therefore, feeding concentrate levels according to milk production and conducting feeding trials on agro-industrial by-products cannot be accurately carried out. The design of the concentrate feeding facilities has been dictated by the milking system rather than for research purposes.

Recommendation - If research is to be given priority at the IRZ stations, revise the milking-feeding system to conventional stalls with feed managers and bucket-type milking machines. This would permit each cow sufficient time to consume her feed allowance as well as provide accurate measures of both feed intake and milk yield on individual cows.

C. Research Animals

There are currently inadequate numbers of lactating animals (cows and goats) to conduct research trials which require milk yield as the performance measure. This problem is further compounded by having too many breeds which makes it difficult to differentiate between genetic and environmental effects.

Recommendation 1 - Put greater emphasis on nutrition and reproduction in managing the herd. This will improve lactation persistancy and shorten the reproduction cycle so that a higher percent of the cows and does will be milking instead of dry. It will also increase the birth rate and subsequent herd size.

Recommendation 2 - If higher milk yield is truly the ultimate objective of introducing the exotic breeds, there is already sufficient evidence to know that the Holstein, Toggenburg and Saanen breeds are the superior milk producers while the Jerseys, Montbeliards, and Nubians are less desirable. Thus, the following recommendation is presented for IRZ's serious consideration:

Bambui Station - In the near future, distribute all the purebred Jerseys, Jersey-white Fulani crossbreds, and Holstein-Red Fulani cross breds to recipient farmers. Retain all purebred Holstein and white Fulani females as the station herd. Inseminate both Holstein and white Fulani females to imported high genetic Holstein sires. Build up the Holstein female herd for research purposes and distribute the purebred Holstein male progeny to farmers for natural service in upgrading the genetic level of their herds. The Holstein-white Fulani progeny could be used for research and for distribution to farmers.

The research program would be strengthened by having a larger number of only two dairy breeds (Holstein and Holstein-white Fulani cross). The recipient farmers would gain by having higher potential milk producers. Dairy development in the Bamenda area would be on a more chartered course with the station playing a more definite leadership role in research and supplying the area with high genetic animals.

Mankon Station - Distribute the present Nubian herd to farmer recipients and concentrate the future program on building up the Toggenburg and Saanen breeds for research and later distribution to farmers.

Wakwa Station - Build up the purebred Holstein and Holstein-Gudali crossbreed herds as rapidly as possible. As the number increases gradually eliminate the Montbeliard F2 crossbreds. The Montbeliard breed is well-known as a low producer of milk and should not be considered as a breed to improve milk production in the Ngaoundere region.

D. Research Staff

In some cases, research responsibilities do not conform to the specific scientific training of the person in charge of the projects. This is especially true of the dairy cattle research program at Bambui. No IRZ research personnel at that station has received any University training in dairy or animal science.

The dairy goat program at Mankon has no IRZ personnel assigned in a leadership position specifically for goat research. Most of this responsibility has been delegated to Mr. Howell who is a HPI employee.

Dr. Mbah at Wakwa is serving as station Chief and is in dire need of someone trained in dairy or animal science to provide assistance to the herd management and research program. He also needs someone trained to conduct the milk technology research.

Recommendation - IRZ should recruit qualified personnel to fill these research positions as rapidly as possible. It is also suggested that the remaining long-term trainees under this project be selected and sent to the U.S. as soon as possible. They are already needed by the project.

E. Experimental Design and Statistical Analyses

All research institutions need an advisor on setting up research designs and deciding the appropriate statistical analysis prior to commencing each research project. IRZ is also in need of such an advisor. It is very abvious, that there can be no scientific significance applied to much of the data being generated by the IRZ research stations because of inadequate number of animals and poor experimental design.

Recommendation - That IRZ employ a person trained in statistics and experimental design to provide guidance in setting up each research project and the statistical method of analysis.

F. Priority of Research Projects

The number and types of research projects approved by the statutory Programs Committee far exceeds the present research capability of the IRZ stations. This is especially evident when one studies the list of projects for 1981-82. A majority of these projects have not yet commenced for various reasons.

It is also apparent that animal reproduction problems are one of the most serious types of problems facing the station and farmer herds. This area of research is not included in the dairy cattle and goat projects.

Recommendation - That IRZ put greater emphasis on prioritizing its research projects in accordance with its capacity of personnel, station herds, and facilities as well as priority of need by the livestock farmers.

G. On-Farm Research Data

Further information on livestock adaptation, performance, and cost benefits could be obtained if livestock recipient farmers were taught record keeping procedures in their 3-month training course prior to receiving animals. The desired type of record forms could be designed and provided to the farmers along with a signed agreement to make the records available to the research station. Such records could include recorded data on health, reproduction, feeding, milk yield and sales. The practice of recording such data would also help the farmers become better managers.

Recommendation - IRZ should strongly consider extending its research data base to include information from farmer recipients of project animals.

H. Dissemination of Research Results

The present IRZ practice of reporting research activities in annual station reports reaches only a limited audience; primarily DGRST staff and administration. Other livestock agencies, such as MINEL, whose personnel are charged with farmer education and other groups who service farmers could also benefit from IRZ research information.

Recommendation - In addition to IRZ station annual reports, individual research reports should be produced and disseminated to a wider audience, including livestock extension and service personnel.

Formal Scientific Training Received by IRZ Research Personnel

Bambui Station - Dairy Research

Mr. Justin Mbanya - B.S. degree with major in Biochemistry from the University of Yaounde. An M.S. degree in Human Nutrition from Queen Elizabeth College in London. Mr. Mbanya joined the Bambui Station as its Chief in January, 1981.

Mr. Richard Njong - Technician, two years post-secondary school with a General Certificate of Education (meets qualifications for University entry). Mr. Njong joined the Bambui Station in 1978.

Mr. Denis Djime - Technician, two years post-secondary school. Received six months training at HPI in Littlerock, Arkansas. Joined Bambui Station in 1978.

Since the projects were listed in the IRZ publication, three other staff members have been recruited to conduct research on milk technology:

Miss Tiku - B.S. and M.S. degrees in Food Science at the University of Reading, London. Miss Tiku joined the Bambui Station in June, 1982.

Mr. Libouga - B.S. degree in Biochemistry at University of Yaounde, M.S. degree in milk technology, France. Mr. Libouga joined the Bambui staff in November, 1982.

Mr. Lobe - One year at University of Yaounde. Mr. Lobe joined the station as a dairy lab technician in March, 1982.

Mankon Station - Small Livestock Research Sheep and Goats:

Dr. Ruby Fomunyan - B.S. degree in Chemistry and Biology, University of Minnesota; M.S. degree in Chemistry and Biochemistry, University of Minnesota; Ph.D. degree in Animal Science, University of IFE, Nigeria.

Dr. Kenneth Ndamukong - B.S. and M.S. degrees in Zoology, University of IFE, Nigeria.

Mr. Joseph Howell - HPI Small Ruminants Advisor with B.A. and M.S. degrees in Animal Science.

Best Available Document

Swine:

Mr. Fombad - B.S. and M.S. degrees in Animal Science from the University of IFE, Nigeria.

Research Laboratory at Mankon Station:

The new research laboratory at Mankon is sectioned into specific categories of Nutrition, Biochemistry, Hostology, Pathology, and Microbiology. The head of the laboratory is Dr. Ruby Fomunyan.

Dr. Ruby Fomunyan - B.S. degree in Chemistry and Biology, University of Minnesota; M.S. degree in Chemistry and Biochemistry, plus a minor in instrumentation analyses, Unviersity of Minnesota; Ph.D degree in Animal Science, University of IFE, Nigeria.

Mr. Kenneth Ndamukong as Chief of Station and in charge of the histology and pathology sections has B.S. and M.S. in zoology. Other laboratory research personnel include:

Dr. Ngou - Ph.D in Nutrition Science, U.S.

Dr. Ekue - DVM, University of Ibadan

Dr. Nfi - DVM, University of Ibadan

Dr. Nielsen - DVM, Zootechnician.

In addition, the assistants in each laboratory section have all completed secondary school with passing grades in chemistry, math, biology, and physics.

Wakwa Station - Dairy Cattle

Dr. David A. Mbah - B.S. in Biology, Cuttington College, M.S. Animal Science (genetics and reproduction), University of Florida; Ph.D in Genetics, Pennsylvania State University. Dr. Mbah is Chief of Wakwa Station and coordinator of Bambui dairy research projects.

APPENDIX B

Livestock Distribution

A. SUMMARY

A.1. Purpose: This section will (a) assess progress to date in reaching livestock distribution targets, (b) examine the distribution process to determine whether it is operating in an efficient manner (c) determine the degree to which the intended farmers are receiving livestock (d) assess the current condition of the livestock distribution program. (See Evaluation Scope of Work)

A.2. Major Conclusions:

a. Internal and external constraints have slowed progress toward reaching distribution goals. (See Section C.1 & 2)

b. An efficient distribution system was operative until June 1982. (See Sections B and C.2.b.)

c. Intended farmers have been receiving the livestock. (Section C.3.)

d. Livestock distribution is currently at a standstill (Section C.2.b.)

A.3. Recommendations:

A discussion of each recommendation with supporting references is found in Section E.2.

It is recommended that:

a. The Director of I.R.Z. authorize in writing the immediate resumption of the Distribution program for all species except swin.

b. Concrete arrangements be made between DGRST and MINEL for increased and substantive participation of MINEL in the project.

c. Personnel with responsibility and authority for livestock management be provided for each unit.

d. A Cameroonian counterpart for the head of Small Animal Research be appointed at the earliest possible moment.

e. Protocols for on farm research in cattle, sheep, swine poultry and rabbits be prepared on the model of the off-station goat research protocol.

f. Recommendations found in Attachment "J" be implemented.

g. Uniform and current livestock inventories be kept for all species, by breed, at each station.

Distribution of Livestock

B. Background

1. History

H.P.I. - I.R.Z. Cooperation in the development of the Livestock Sector began in 1974 with the provision of twenty cattle of the Holstein and Jersey breeds located at Bambui Research Station. Expansion of the program took place in 1976 with the addition of thirty-eight dairy cattle, (sixteen of which were transferred to the Wakwa Station at Ngaoundere), goat, poultry, swine and rabbits acquired by importation through H.P.I. and local purchase. A recognition of the need for further emphasis on multi-faceted assistance to small-scale livestock producers, training, staff upgrading and marketing led to the implementation of the current project. Livestock distribution began as early as 1978.

B.1.a. Inputs: Livestock valued at $114,000 has been provided. Other livestock related expenditures, including personnel costs, supplies, equipment, and shipping totalled approximately $439,950 as of November 31, 1982. Livestock provided by species are:

Beef cattle	6
Dairy cattle	81
Goats	60
Swine	40
Sheep	52
Rabbits	53
Poultry	4,400

Livestock inputs from 1974 through 1982 are shown in Attachment A.

B. Objectives, Goals on Implementation Plan

B.1.a. Objectives:

Livestock distribution as an integral part of the total project has the objective of creating a condition in which production and consumption of livestock and poultry are increased by the end of the project.

B.2. Livestock distribution goals to be reached by February 28, 1985 are:

Poultry	350,000
Rabbits	3,400
Swine	2,200
Cattle	360
Goats	210
Sheep	110

B.2.a. Distribution goals to be met by mid-project (2/28/83) are:

Poultry	105,000
Rabbits	1,500
Swine	1,000
Cattle	140
Goats	60
Sheep	20

B.3. Implementation Plan

In order to achieve these distribution goals, the close collaboration of agencies: DGRST, MINEL, and H.P.I. is necessary. According to the Scope of Work, distribution will be carried out mainly by the staff of MINEL, with assistance from the other two agencies. Distribution is to commence in the fiscal year and continue up to and beyond, the end of the project funding period.

B.4. Livestock Distribution Procedures

B.4.a. Livestock Distribution Committee

As specified in agreements reached and ratified by H.P.I. and I.R.Z. on 11/8/80 all decisions regarding the distribution of livestock are to be made by a Livestock Distribution Committee.

B.4.b. Procedures

Selection of farmer for participation in training and subsequent distribution of livestock involves the following steps.

- Availability of livestock is determined by staff.
- Announcement of training opportunity is made.
- Written applications are submitted.
- Staff screens applications on a preliminary basis.
- Staff recommends applicants to committee following on-site visit to determine availability of water, land and management capability of applicant.
- Committee makes final determination of qualifications.
- Applicant successfully completes training and returns home to prepare recommended facilities, water supply, fencing, pasture etc. with advice of staff.
- Staff determines adequency of preparation.
- Livestock are made available at a subsidized price.
- Farmer purchases stock outright or pays 25% down in cash and signs a contract specifying one of a number of options for payment of the balance within a specified period of time. Livestock remain property of IRZ until payment is completed.

- Staff submits names and addresses of recipients to MINEL for extension services. Periodic extension and training visits are also made by H.P.I. and I.R.Z. staff.

C. Achievement of Distribution Goals

C.1. Distribution Activities Prior to March 1980.

The distribution system employed in this project is based upon prior experience in this area of work. According to H.P.I. and I.R.Z. records, the following livestock were distributed prior to the inception of this project: poultry - 3,000 hatching eggs and 80 breeding hens, swine - 167, cattle - 30, goats 7. These figures do not include 16 cattle transferred to Wakwa Station following the 1976 shipment from H.P.I. If the project is viewed in its entirety over and above the parameters set by the current A.I.D. funded period, the preceeding numbers should be regarded as output achievement.

C.2. Distribution Accomplishments to Date

Livestock distribution as envisioned in this project has two facets; the first is to provide livestock to producers; the second is to reach, to the fullest extent possible, the limited resource, small scale farmer.

C.2.a. Livestock Distribution

Table 1 below summarizes actual distribution in comparison with the goals to be reached by March, 1983. Estimated and actual numbers of recipients for each species.

Table 1 Cameroon Small Farmer Livestock and Poultry Development Project
Livestock Distribution Summary
March 1980 - January 1982

Species	Targeted Output 3/80-2/83	Total Distributed To 1/83	No Producers
Poultry	105,000	86,300 [3]	NA [2]
Rabbits	1,500	99	33
Swine	1,000	437	106
Cattle	140	87	30
Goats	60	10	5
Sheep	20	0	0

1. See PIO/T 631-0015-3-10004; Attachment 1, p.4.

2. NA = not available

2. Mankon Poultry Section, Annual Report indicates that 3,800 day old chicks were distributed during FY 1981-82. An addition 137,475 hatching eggs were sold during the same period. Assuming a conservative hatching rate of 60% an additional 82,500 chicks were born, which gives a total of 86,300.

3. Exact figures not available, however each producer normally receives 2 does and 1 buck.

C.2.b. Constraints to Livestock Distribution

Successful distribution depends upon adequate reproductive performance of livestock, management systems to ensure the distribution system described in section B-4. The information presented in table 1 indicates that achievement has fallen somewhat short of the goals. This could be due to the setting of unrealistically high goals, less than optimum functioning of the three factors mentioned above, or a combination of both. In this section an attempt is made to highlight briefly some of the more general constraints (not excesses) which have been operative. Major among these are:

- Delayed Project Implementation. Although this project had its official start as of March 1980, a full complement of staff were not recruited and in place until late 1981 the chief of party reported April 1, 1981. The collection, assembly, and shipment of large quantities of livestock and material required a period of some 14 months to complete. Distribution goals, therefore, were set without taking into consideration the lead time involved.

- Acclimitization of Animals. H.P.I. experience with the placement of temporal zone livestock into tropical environments has been that some species require up to two years to achieve proximate normal productivity. Adjustments must be made to a variety of heretofore unencountered diseases, a new environment, new feeding regimes, and new management practicies. These factors also seem to have been overlooked in the setting of distribution goals.

- Limited Participation of MINEL. Although the project statement of work places primary responsibility for placement of animals on MINEL, MINEL is not a full signatory to the project agreement. Verbal statements of willingness to cooperate have been made from time to time but formal written agreements have yet to be completed. Involvement thus far has taken the form of participation in Distribution Committee meetings. Increase involvement will require reallocation of personnel or recruitment of new personnel, funding supplies and transportation.

- Administrative: In response to the minutes of a Distribution Committee meeting held on June 8, 1982 the Director of IRZ issued a letter directing the cessation of distribution of goats, sheep, imported rabbits and their offspring and all but four head of cattle until a number of conditions were met. Approval of continued swine distribution is also contingent upon the meeting of certain conditions. These conditions with regard to cattle distribution were met on July 15, 1982 and verbal approval of resumed distribution was received at a later date. On January 14, 1983 the Chief of Center issued a letter announcing the availability of 17 herd of cattle for placement with farmers. Resumed distribution seems to be dependent upon written approval from the Director of I.R.Z. The written approval by the Director of IRZ was given on January 15, 1983. The above actions represent a significant departure from the procedures outlined in section B.4.b.

- Quarantine of Swine: An outbreak of African Swine Fever in certain areas of the Cameroon led to the quarantine of the Mankon swine unit, cessation of swine distribution, and training in swine production on June 20, 1982.

- Low Productivity of Livestock: In addition to the negative effects of acclimitization related stress, an examination of the FY 1981-82 annual report of the Mankon Station and various records from the Bambui Station reveals that such factors as unstable feed supply, inadequate pastures, technical problems with equipment, high incidences of diseases and parasites, and lack of an adequate water supply are constant problems. This condition has led to herd growth rates ranging from negative to marginal, high death rates especially among young stock, and negative to marginal female replacement rates. Under such circumstances sufficient numbers of animals cannot be produced for either distribution or research purposes.

Table 1

N.P.I. Inputs - IRZ Livestock Program
Local Purchase (LP) & Shipments
1974 - 1982

		MANKON			BAMENDA		
Date	Species	M	F	Total	M	F	Total
8/74	Cattle	x			1 J	10 H 9 J	20
9/76	Cattle						38
	Goats			.36			
1980	Poultry		300	300			
	Dairy Cattle (LP)						2
	Swine (LP)		1				
	Rabbits (LP)		32				
6/2/1982	Cattle:						
	Brangus				1	5	6
	Holstein				2 (LP) 8	71	81
	Goats	1 (LP)					
		14	45	60			
	Swine	4 (LP)					
		12	23	40			
	Sheep	11	41	52			
	Rabbits	1 (LP)					
		10	41	53			
7/30/81	Poultry			4,400			

*** LP = Local Purchase *** H = Holstein * J = Jersey

Table 2. Summary

Beef Cattle	6			6			
Dairy Cattle	127			127			
Goats	96		2(LP)	98			
Swine	40			40			
Sheep	52			52			
Rabbits	53	1		54			
Poultry	4,400		30	4,430			

C.3. Delivery of Services to the Intended Population

The intended population to be served is the men and women who operate limited resource small scale farm enterprises. In general it can be said that this project has been successful in serving its intended population. Although complete precise data is not available the size of livestock operation, social status, and degree of off farm employment place the population served well within USAID "mew directions" guidelines, H.P.I priorities and I.R.Z. policy, given the financial demands of livestock, especially dairy production.

C.3.a. Size of Operation: Available data provide a rough indication of number of animals received for all except species poultry, current head size of dairy cattle and acreage devoted to dairy production. An examination of table 1 shows the mean number of animals received per recipient are:

Rabbits	-	3
Swine	-	5
Cattle	-	3
Goats	-	2

Current herd size of individual dairy producers ranges from 31 (which includes a number of local cattle) to 2, median herd size is 4 and 72% (13) of the individual producers have five or fewer. No similar date is available for producers of other species.

Acreage devoted by individuals to dairy production ranges from thirty to five.

C.3.b. Social Status: Of thirty dairy farmers on record, twenty do not hold a professional or traditional title. Five of the thirty are Missions. Those who do hold such titles (Or, Fon, Hadji) have received a total of five herd of cattle, slightly below the average number received by other participants. Accomodation of members of the local elite might be justified in terms of investment in legitimization and support of activities among low income persons. None of the six swine producers visited by the author in November, 1980 were of high social status. One of eighteen rabbit producers in the Bamenda area is a school teacher.

C.3.c. Off Farm Employment: During the course of the evaluation four individual participants were identified as having a significant portion of their income derived from off farm employment. Two are laborers at the IRZ Bambui Station, one serves as a para-professional dairy extension worker and one is a school teacher mentioned in the preceeding section.

C.3.d. Involvement of Women: According to project design women are expected to play a leading role in the execution of the project (PIO/T 631-0015-3-10004, pp 1-2.) Project involvement is to take the form of employment at all station locations, participation in training and extension programs dealing with the care and management of livestock, family health and infant nutrition, and receipt of improved poultry and livestock.

The FY 1981-82 annual report of the Mankon Station shows a total staff of eighty six of which twelve are women. These twelve are divided among the following positions: Research - 2, Technician - 3, Livestock Attendant - 4, and Office Staff (typist) - 3. Similar data for the Bambui and Wakwa Stations is not at hand.

One female has received dairy training and will receive her cattle in the near future. Several women are involved in rabbit training and distribution activities. Data for other species is not available.

Extension programs in family health and infant nutrition have yet to be designed and implemented. Issues relating to increased involvement of women in the project at all levels requires further investigation, study, and planning.

C.3.e. The Role of Institutes: Seven institutions, all mission related, have received at least one species of livestock through the distribution program. Cattle herd sizes range from fourteen to one while the size of dairy operations ranges from 100 to 10 acres. At the present time these institutions utilize livestock for student training and provision of protein food to students, orphans, and others. Future involvement of one or more of these in the multiplication and distribution of high quality crossbred stock is a possibility.

C.4. Condition of Livestock: The condition of the cattle and rabbits observed on farms visited compares favorably with that observed by team members or staff visiting Bambui, Mankon and Wakwa stations. Visits took place during the dry season and forage was scare. Cattle at the stations were thin as were the sheep and goats. Swine observed were still in relatively good condition. Distributed rabbits were receiving adequate amounts of green feed. The condition of the rabbits at Mankon was fair. Cousative factors related to the condition of the livestock are listed in section C.2b. A discussion of the condition and management of the poultry flocks at Mankon appears as a separate attachment to this report.

D. Results

Objectives and quantifiable data regarding the results of the distribution program are not available because the project is at mid point. However several tentative results can be suggested.

- Increased nutrition: A significant proportion of the afternoon milk produced by farmers interviewed is consumed by the family. Goats distributed have not produced milk yet while data regarding egg and poultry consumption is not available.

-Stimulation of private enterprise: In response to increased levels of livestock activity in the Bamenda-Mankon area at least one privately owned feed mill and at least two privately owned hatcheries are in operation. Further, a small firm manufacturing kerosene or butene incubators has been established.

- Increased income for farmers dairy farmers: Preliminary studies for dairy farmers who received cattle at a subsidized price and who sell milk through the I.R.Z. subsidized pick up and marketing service indicate farmers may realize a net income of 80,200 CFA ($240) per cow per year in addition to capital formation, savings and increased status through cattle ownership. Similar projections indicate a possible net income of at least 11,960 CFA ($35.70) in addition to milk consumed for a four goat herd and, given excellent management plus sufficient capitl for investment, 80,110 CFA ($240) over a 17 month period for poultry. Opportunity costs resulting from possible diversion of land, labor and capital from other farm enterprises have not been determined. Clearly, more study of actual farm experience is necessary at this point before solid conclusions can be reached.

- Cooperative Development: The Bamenda Dairy Cooperative was organized on the first of May 1981 by a group of farmers recently trained under this project (Attachment H)., This group meets monthly to receive further training and follow up and to conduct business. Preliminary work is being conducted with producers of native goats in three locations, and the nucleus of a rabbit raiser group has also been identified.

A more intentional focus on the nutritional, social, and economic results of the project will be called for in the end-of-project evaluation.

E.1. Basic Consideration

The cooperative efforts of IRZ. USAID and H.P.I. have made a virtually invaluable resource available to Cameroonian farmers. Located at Wakwa, Bambui and Mankon are breeds and bloodlines not available anywhere else in the country. The managers of all aspects of this project now have before them the task of making the best possible use of this resource. A task which involve a recognition of the purpose for which the animals were received.

They are intended for research. They are intended for distribution. They are to increase an improved genetic base. They are intended for use in training and demonstration. But if the animals die none of these necessary purposes will be realized.

This task also involves a recognition of the basic fact that livestock production differs radically from other types of agricultural production. Livestock requires daily care and close attention. Successful livestock production demands that qualified responsible persons be on site twenty-four hours a day - seven days a week. Emergencies know no schedule. Diseases crop up when they will. Equipment fails any time of the day or night.

Heat has its own time of occurring. Difficult births come unexpectedly. All new born deserve immediate care.

Improved livestock, resulting from generations of patient and careful breeding and selection, exist to benefit human kind. Actually little is asked in return: water to drink, adequate feed, protection from parasites and diseases, a safe environment and a measure of extra care. If these are provided on a continued basis high mortality rates will be overcome and the parent stock will survive. They will multiply. They will produce milk and meat and eggs. They and their offspring will be available in sufficient numbers for both the researcher and the extentionist.

Seen in its entirety this project consists of four basic and interrelated functions: research, distribution, training and extension and management. Personnel are in place whose primary interest and responsibility (i.e. each of the first three. What appears to be needed is personnel whose first responsibility is the successful managment of the I.R.Z. flocks and herds and who have the authority to make decisions necessary to maintain successful healthy livestock operations. If such persons are not readily available recruitment and training of such specialists will be necessary. (At this point it is worth noting that all three persons now studying for M.S. Degrees in the U.S. under project auspices will engage in research upon the completion of their courses and return to the Cameroon. Two other IRZ employees, one in the swine unit and one at the Bambui dairy, have successfully completed a five month H.P.I. livestock training course in the U.S.A. and now hope to find a way to earn their B.S. Degrees. Scholarship funds should be available to train these persons to assume unit management positions.)

E.2. Recommendations for continued successful distribution:

With the basic considerations in mind, and in light of information presented in preceeding sections it is recommended that:

a. The Distribution Committee must be allowed to function as originally planned.

All conditions requested by the Director of I.R.Z. were met by July 15, 1982. At the writing of this report 17 herd of dairy cattle await distribution while at least seven families have completed all preparations, have been certified as qualified, and have been waiting for cattle for at least six months. Of the sixty goats shipped to the Cameroon on June 1, 1981 twelve does and three bucks were to be distributed to farmers. These animals are reported to be ready for delivery. In order for the distribution committee to function all parties must follow the agreement signed in the fall of 1980.

b. Concrete arrangements be made between DGRST and MINEL for increased and substantive participation of MINEL in the project.

Recent high level talks between the two agencies have been fruitful. At the present time H.P.I. and I.R.Z. staff persons are attempting to meet growing needs for extension services. The drafting and implementation of such special agreements would enhance the effectiveness of both parties and of the project.

c. Personnel with responsibility and authority for livestock management be provided for each unit.

The reasons for this recommendation are contained in section E.1.

d. A Cameroonian counterpart for the Head of Small Ruminant Research be appointed at the earliest possible moment.

The H.P.I. Small Animal Advisor has performed the duties of Head Researcher, Manager and Extensionist servive September 1980. His contract will be fulfilled on September 14, 1983. Early appointment of a counterpart will expedite achievement of distribution goals and will ensure continuity of leadership in the small ruminant program.

e. Protocols for on Farm Research in Cattle, Sheep, Swine, Poultry and Rabbits prepared on the model of the off Station Goat Research Protocol.

Overall project success, effective distribution, relevant training and substantive extension depend directly upon a knowledge of on farm conditions, practices and productivity. On farm research can play a pioneering role in the development of the livestock industry as well as provide the basic knowledge needed for project success.

f. Recommendations found in Attachment A be Implemented

Attachment J consists of a letter dated November 29, 1982 from Ms. Rosalee Sinn to Dr. Emmanuel Tebong which contains detailed recommendations for improvement of the goat units. Improved facilities and management of this unit are necessary for reaching distribution goals.

g. Uniform and current Livestock Inventories be kept for all Species, by Breed, at each Station.

A simple and accurate record keeping system facilitates research, management and distribution planning. Such a system will enable personnel to evaluate herd performance and to compare performance among stations. H.P.I. has developed such a system which is applicable to small farmers as well as the stations.

B. P. 167
Bamenda, Northwest Province
Cameroon, Africa

November 29, 1982

Dr. Emmanuel Tebeng, Director
Institute of Animal Research
B. P. 1457
Yaounde, Cameroon

Dear Dr. Tebeng:

First, let me comment in a general way on the IRZ/ARI/AIN program at Nkolbisson Station. The physical improvements during the past 18 months are obvious. The new research and office building is a dramatic symbol of a unified effort. New livestock facilities and preliminary forage trials are evidence of a growing base of animals for research and small farmer development. The quarantine of cattle, while it has limited production and distribution, is commendable in that it seems to show Dr. Tebeng's willingness to forego short term goals to insure a future cattle program for the Northwest Province. The increase of competent research staff has brought additional expertise to the activities at the Station.

I want to make a few brief observations on the sheep program. The Blue Tongue epidemic has set the program back considerably. However, with a vaccine being developed this should be under control in the next few months. I would encourage those researchers in charge of obtaining the vaccine to do everything possible to receive it as soon as possible.

The exotic sheep show signs of adaptation and the crossbreds hold promise for a better meat animal. If wool breeds are to continue to be a part of the livestock research at Nkolbisson, a sheep management course for workers and researchers must be planned in the near future. Seemingly small matters, such as shearing wool sheep, must be a part of this management course. I would recommend that a sheep consultant be brought in for a period of six weeks.

If wool is to be marketed, training needs to be given in processing and spinning of wool and markets for wool need identified.

Fencing at the new sheep barn is a must within the next two months.

Regarding the dairy goat program at Nkolbisson and the research that is being carried on with the exotic breeds, my observation is that the animals at the Station are being managed well and most are in good condition. Much credit must be given to Joseph Mowall for better management systems, health care and general sanitation which has developed over the past 18 months.

Control of ticks and parasites and treatment for diarrhea and coccidiosis in kids, along with improved sanitation, have been the most important factors in improved herd health. A preventive program for ticks and other parasites, housing, and feeding of kid goats has resulted in a significant increase in herd size.

Best Available Document

The research on dairy goats at Hanken and the increased competence in management have brought the time to a point where off-station research on dairy goats is now possible. A [illegible] participants has been approved by the Chief of Station [illegible] and is being submitted to the Director.

My capsule view with [illegible] over the past 17 years as I have seen successful dairy goat programs developed in many countries, causes me to be extremely optimistic about the future for dairy goats as family milk sources in Cameroon. We know that our technical [illegible] with exotic goats that test milk can be accepted and will be used by them families.

Let me [illegible] a few needs which I see to enable the goat program at Hanken to move ever further.

1) A Cameroon counterpart for Don Hanell. This is critical. All other needs listed will have much more probability of success if this first recommendation is carried out.

2) Additional fencing must be repaired and made goat proof. No amount of management can overcome the need for this. An additional 20 hectares must toward to permit rotation of pastures. These should be parceled into 1/2 hectare plots with water available in each area.

3) Water must be piped to the goat barn for feeding, cleaning and dipping. This will save valuable worker hours for more productive activities.

4) The 1970 Approved Protocol relative to research in Extensive and Intensive Husbandry systems should be put into operation.

5) The new goat barn should be constructed. This is budgeted and building plans attached to this letter.

6) The Off-Station Dairy Goat Research Protocol should be initiated within the next two months.

7) There should be an improved breeding program for bucks.

8) A careful crossbreeding program with a number small number of local and exotic does should be initiated with the sought-after result being a 3/4 cross that pleases animal.

9) A research protocol should be written to explore the use of poultry litter as a protein supplement for ruminants at Hanken.

10) Records on each and all goat be brought up to date and accurate records kept on a daily basis concerning health, breeding, kidding, milk production.

Some of the recommendations have already been discussed with the Chief of Station, the Chief of Party and Donald Hanell. Items 6 and 9 will be the subject of 3 conferences to be held with Researchers assigned to goats and goat workers on December 7, 8, 9.

Best Available Document

My assumption is that the research objectives at Makerere have the ultimate goal of rendering the small farmer and enabling additional protein to be available to Ugandan farmers.

I congratulate you on the progress you have made in the past six years.

Sincerely,

Donald Stern, Consultant
Rights Project Internacional

cc: USAID - Bill Ickwilles
Chief of Party - IPI
Chief of Center, Sanini - IPZ
Chief of Station, IPI
Joseph Newell
Mr. James Dobrins, IPI, Little Rock

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APPENDIX D

TRAINING

A. SUMMARY

A.1. Purpose: This section will discuss long term and short term training offered to farmers, government workers, station personnel and others. Progress to date in the areas of training facility construction and graduate level training will also be assessed.

A.2. Conclusions

a. The number and variety of training courses and persons trained exceeds expected accomplishment to date (Section B).

b. Extension training expansion necessitates active paticipation of MINEL (Section B.3).

c. Training facility construction is unnecessary (Section D).

d. Graduate level training is proceeding according to plan (Section C).

e. Training of farmers appears to be effective (Section E).

A.3. Recommendations

It is recommended that:

a. Every effort be made to enable participation of MINEL in extension training.

b. Mankon Station develop an integrated training plan with one staff person serving as coordinator.

c. Consideration be given to providing training in livestock management for at least on student.

d. Continued emphasis be given to off-station training.

B.1. Training activities at IRZ Stations

B.1.a. Training at Bambui Station

Training in dairy production provided through three months short courses for farmers, in science training for IRZ technicians, practical training for veterinary students, practical training for agricultural students. A monthly in service training program or IRZ staff was started in December 1982.

APPENDIX

MILK MARKETING

A. SUMMARY

A.1. Purpose: This section will assess progress to-date in developing an effective, efficient, and profitable milk marketing/distribution system.

A.2. Major Conclusions:

a. The lack of operational processing equipment has prevented the milk marketing system from functioning as anticipated in the Northwest Province.

b. Milk spoilage occurs, especially during rainy season when production is highest, representing financial loss to the farmers in the Northwest Province.

c. There are apparently no problems with the lack of demand for milk; much higher quantities of milk than currently supplied can be sold easily in the Northwest.

d. There has been no milk marketing system established in the North Province because the pasturization and packaging unit was not operating.

e. The Bamenda Dairy Cooperative is being established in the Northwest Province and will soon take over milk collection from IRZ.

A.3. Recommendations:

a. The milk processing equipment at Bambui station must be fixed as soon as possible and a stand-by generator on line to be used during SONEL power failures. The success of the milk marketing system depends upon the operation of this equipment.

b. Processed milk should be marketed via retail outlets.

c. Maintenance crew must be available to maintain milk processing equipment in working order.

d. Managerial assistance should be provided to the Bamenda dairy cooperative to assure that it becomes a viable institution.

B. Description of Milk Marketing

Milk not used by the station or by the farmers is sold daily. Farmers leave their morning milk on the road near their farms in a variety of containers. The "milk van" comes by and picks up the milk and takes it to Bamenda and "environs" to sell it. Prior to picking up the farmers' milk, the driver picks up the milk from the Bambui station. Only about half of the farmers who have cows were producing milk for sale, at the time of the evaluation.

The driver puts the milk he collects into large milk urns and writes a receipt for each farmer showing the amount of milk collected each day. Farmers are reimbursed monthly for the quantity actually sold. If, for any reason, any milk is not sold by the milk van driver, that amount is subtracted from the monthly payment.

During the evaluation, the driver collected one large urn full of milk from Bambui station (approximately 55 liters) and a total of one large urn full of milk from all farmers together.

The driver begins to sell the milk as he heads from Bambui and Nkwen toward Bamenda. He has, over the last few years, established regular customers who request the milk almost daily. These customers range from small farmers who buy only two or three liters a day to a French bakery which may buy as much as twenty liters in one day. Other regular customers include religious missions, members of the Bamenda Club 58, and the wealthy. The driver has worked out a marketing system, the aim of which is to sell the milk before it spoils.

The "unsold" milk is milk which is left over after the milk-van run, which has not been sold. An investigation as to why the milk was not sold indicated that the milk soured by mid-afternoon, making it unsuitable for sale. The milk-van driver stated that he would have no difficulty selling the milk, but felt that he could not, due to its condition. The milk sits in the van from early morning until afternoon and constantly churns on the rough, dirt roads. The van is also quite warm. Hence, the milk's life is short. Even if the milk does not spoil, the driver may stop selling the milk before it is gone due to the difficulty of reaching customers during rainy season.

Farmers are paid only for milk sold, so that unsold milk to them represents a loss. The HPI team figures that 10% of the farmers' milk and 16% of the Bambui station milk is unsold. Hence the price to the farmer is over the long range, may represent considerable loss to the farmer.

Previously, unsold milk was thrown away. Currently, this milk is given to a hog farmer.

Sour milk can be safely feed to calves or pigs, so that it would seem feasible for Bambui station to work out a system whereby unsold milk would be used either by the dairy station, or at Mankon, to feed the IRZ swine.

It is obvious that the costs of the current marketing system are high for the dairy farmers and explain the farmers' discontentment with the arrangement. The high quantity of unsold milk results from the sale of milk in its raw form, rather than from a lack of demand. This quantity of unsold milk is greater during the rainy season, when production is up. If the milk were pasturized, it would sustain the vagaries of the distribution system.

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The Bamenda Dairy Cooperative is currently being established by the farmers who have received cattle from IRZ. Although not yet official, this cooperative has been meeting every month for the past three years. The HPI dairy advisor and agricultural economist have assisted this cooperative to become a viable organization capable of marketing milk and of providing feed, medicine, supplies and other services to the member farmers. The monthly meetings were originally called to serve as a forum for continuing education to assist the farmers in the management of their herds; however, they also have become a forum for airing problems and sharing solutions, as well as for uniting to improve their management system. The farmers are united in believing that they must have more control over the marketing of their milk. Consequently, they have purchased a milk van, and plan to hire their own driver who will collect both their morning and evening milk and deliver it to the IRZ station at Bambui for pasturization and selling. In this way, the farmer will be paid for all milk collected, which will hopefully be sold at a price 40% higher than the current price. This plan will be implemented as soon as the milk processing machinery is functional at Bambui.

The purchase of feed for member farmers has been quite successful thus far, and promises to keep supply certain and price reasonable.

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During the project period the following number of farmers, number of persons have been training on station

Three month course farmers	35
IRZ Technicians	30
ENSA Ag. College students	6
Jakar! Veterinary College (includes beef)	4
Total	75

A detailed course outlined has been prepared and students use a training manual prepared on station.

B.1.b. Training at Wakwa Station. No formal training courses have been offered to date.

B.1.c. Training at Mankon Station

- Goat Courses:

On station training in goat production consists of three week courses for farmers, ten day courses for students, and practice lasting for various time periods. The following number of persons have receive training in goat production at Mankon.

Farmers	25
Students	3
Total	28

A detailed course syllables has been prepared and a detailed manual prepared by staff is used (copy available at I.R.Z. Mankon).

- Poultry Courses

Specialized training in poultry was offered between April and September, 1982. During this period the following numbers of persons received training.

Farmers	26
Peace Corps Volunteers	22
Total	48

A detailed course syllabus and a training manual have been prepared.

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- Courses Dealing with Multiple Species

Two courses on more than one specie were conducted. One duration of ten weeks and the other was three weeks in duration. Persons attending these courses were as follows:

Peace Corps Volunteers	16
Students	9
IRA staff persons	2
Total	27

B.2. Off Station Training Courses:

Placement of the Mankon Station under quarantine had the salutory effect of enabling station personnel to conduct training sessions under village conditions. Topics covered included both single and multiple species. Courses ranged in length from three days to six weeks. These courses were held: three goats, one rabbit and one dealing with goats, poultry, swine and rabbits. Numbers of persons by type of training and location of course are:

- Goat production (Ndu, Banso, R.T.C.)

Students	66
Farmers	24
IRZ Personnel	8
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- Rabbit production (Bamenda)

Farmers	40

- Goat, Poultry and Swine (Bafut)

Farmers	24
Total Off-Station Trainees	162

A training manual for rabbit production was prepared.

B.3. Extension Training

Training as a component of regular extension visits is largely informal. Three people make monthly visits to recipients of dairy cattle. These persons are the IRZ Dairy Technician, A staff H.P.I. extension worker and the H.P.I. Dairy Advsor.

Small animal extension work is largely carried out by the H.P.I. Small Animal Advisor, the Researcher assigned to the sheep program, and the H.P.I. Agricultural Economist.

With projected increased demands for both research and distribution, it is necessary to establish an ongoing relationship with MINEL to provide the extension services and training needed.

C. Graduate Level Training

One of the accomplishments of this project is to provide graduate level training at the Master's level for at least seven persons.

Three persons have already beguan their course work - I.R.Z. has nominated two additional persons and it is expected that MINEL will submit the masses of the remaining two candidates.

All three of the current trainees began this course work in the fall of 1982. The project did not have a chief of party until April 1, 1981 which caused delay in sending the first 3 students to U.S.A.

Maximuango, Joseph Chi is attending the University of Maryland working toward a B.S. and M.S. in Dairy Husbandry. He is expected to return to the project in the summer of 1984 to engage in research.

Tawah, Lawrence Chi is attending Louisiana State University with an Animal Science major having an emphasis on dairy genetics. He will return to the project in the summer os 1984 to assume research responsibilities.

DIEUDONNE, PONDE KAMDEN attends the University of Arkansas with a major in Poultry Science. During winter breach 1982-1983 he spent one week at the H.P.I. International Livestock Center and one week visiting H.P.I. supported small scale farmer projects in Mississippi and Alabama. He will also return in the summer of 1984.

This aspect of the project is proceeding according to schedule. Benefits from such staff upgrading will be significant and far reaching. For reason cited in the Livestock Distribution section training of one or more of the remaining four in livestock management would provide much needed skills to the entire project.

D. Construction of Training Centers

Construction of training centers, including dormitory facilities, is written into the project scope of work. However no item appears in the budget to build such centers. The recent shift in interest from on station training to off station training suggests that such facilities will be unnecessary. Funds allocated for this purpose could be used to

better effect in support of an expanded extension program and for training of MINEL field personnel in animal husbandry and extension methods.

E. Effectiveness of Training

Time constraints precluded a systematic and thorough examination of training results. Farmers interviewed exhibited a good group of the basic principles of sanitation, milking procedures, feed needs and parasite control. All farms visited showed evidence that knowledge has been put into practice in varying degrees.

APPENDIX E

OBSERVATIONS AND EVALUATION OF THE SMALL FARMER LIVESTOCK PROJECT, MANKON STATION, MANKON, NORTHWEST PROVINCE, CAMEROON, AFRICA

Robert H. Roberson, Prof.
Department of Animal Science
New Mexico State University
Las Cruces, New Mexico 88003
[Board of International Food and Agriculture (BIFAD)]

ACHIEVING OBJECTIVES OF THE SMALL FARMER LIVESTOCK PROJECT, MANKON STATION, NORTHWEST PROVINCE, CAMEROON AFRICA.

Establish A Poultry Experiment Station

An excellent facility is nearing completion at the Mankon Station to meet several objectives of the Small Farmer Livestock Project namely (1) development of a research station (2) evaluation of improved breeds of poultry and (3) distribution of the improved breeds of poultry to small farmers. When completed, the facility will be entirely adequate to meet the objectives of the project.

The office and laboratory building is completed, equipped and analysis of feedstuff is underway. The analytical equipment in some of the laboratories is very complex. The maintenance of this equipment may become a giant problem. It is regrettable that this station was not established as part of or near an Agricultural University where researchers could obtain assistance in areas where they do not have expertise.

Houses for the breeding and laying flocks are adequate in floorspace although they should be divided into smaller pens with movable partitions to provide for better experimental design in evaluation of different breeds and lines of poultry, different mixed feeds and feedstuffs, and different management systems.

Completion of the electrical distribution system, construction of a hatchery building and movement of the incubators to the Mankon Station will improve the hatching of chicks. There is a real need to train a technician in the operation and repair of the incubators. Several of the incubators are not functioning because of lack of repair skills and spare parts.

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Construction of a brooder house for replacement chicks and broilers and a cage house for the cages that have been purchased will make a complete facility which will be adequate for years into the future.

The feed mill and storage facility are adequate except for storage of whole grain. A grain storage facility is under consideration.

The lack of a good library with the world's best journals will hamper research at the station. Research proposed in many of the projects has already been done, some of it in Africa. Poultry Science Journal, World Poultry Science Journal, and British Poultry Science Journal would be good starters. Complete sets of these journals are available at a reasonable cost.

Dr. Williams, USAID, the Cameroonian Government and all those who have been involved in the development of the Mankon Station in such a short time are to be commended.

Poultry Breed Evaluation

White Leghorn, White Plymoth Rock, Rhode Island Red, and Cornish breeds were imported from the United States. The primary breeders that supplied the stock was not known at the station. Likewise, whether the stock was purebred or inbred line crosses was not known. If the breeds are purebred, they can be reproduced and used as breeding stock indefinitely. If they are inbred line crosses, they should be used as breeding stock on a very limited basis depending on whether they were parent stock or grandparent stock. The primary breeders in the United States can supply this information. Usually inbred line crosses give superior performance.

Some evaluation of the different breeds of poultry on the Mankon Station has been made and reported in the Annual Report of the station.

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The White Leghorn, White Plymoth Rock and Rhode Island Red breeds have performed acceptably. The performance of the Cornish breed has been very low mainly because they are very old. Broiler breeding flocks seldom give acceptable performance beyond 10 months of lay. White Rock males are bred to Cornish females at the station. White Cornish males are usually bred to White Rock females. This cross is used because the White Rock females lay at a much higher rate than the cornish females, therefore, the cost per chick hatched is much lower.

The White Leghorn breed is an excellent egg laying breed for commercial producers but White Leghorns lay white shell eggs. Brown shell eggs are preferred in Cameroon, therefore, a breed with small body size and high production of brown shell eggs should be used.*

Dual purpose breeds such as the Rhode Island Red and White Plymoth Rock are excellent in back yard flocks for small farmers, but a smaller body egg producing bird is best for commercial producers who confine their flocks and feed them a complete feed. The selling price of larger hens used as commercial layers is higher at the end of lay, but their egg production is lower and their higher value for slaughter is less than the extra cost of feed to maintain the larger hen over the years time.

Poultry Management at the Mankon Station

Several areas of management at the Mankon Station should be improved. Cannabalism among the chickens has been a problem. It can be prevented easily by debeaking the birds and allowing them adequate floorspace. Debeaking should be done between 12 to 20 weeks of age for a permanent short beak without regrowth or sooner if cannabalism begins. Any stress such as high temperatures, lack of feed, lack of water and

* According to IRZ, this is an incorrect impression.

crowding will initiate cannabalism. The Veterinarian at the station had recommended that debeaking be delayed because some birds had died from an unknown crippling condition. While birds should not be debeaked when the entire flock is sick or the flock has been vaccinated recently, a small mortality from some unknown cause should not delay debeaking especially if pullets are nearing sexual maturity. Debeaking after pullets start laying will decrease egg production.

Watering equipment was of good design but several waterers were overflowing. This condition caused wet litter and a greater number of dirty hatching eggs than is normal for breeders on floor litter. The waterers should be maintained to prevent leaks, moved to a location near the outside walls and placed on a platform which will drain to the outside of the building.

The feeders were often too full causing feed wastage or they were empty. This is a usual problem where trough feeders are used and the birds must be fed several times a day. Feed troughs should never be filled more than 1/3 full at any given time. Training and closer supervision of the workers will solve much of this problem. Some of the trough feeders did not have a lip to prevent birds from pulling the feed into the litter. The trough feeders should be replaced with handing self feeders to improve feeder management.

Equipment that is used occasionally such as brooder equipment should be cleaned and stored immediately following use. Equipment left in pens with large chickens will be broken.

The management problems in poultry at the Mankon Station seem to result in part from too many supervisors. One person, perhaps Dr. Ngou, should be in charge of poultry. He should closely supervise those

directly involved in managing the poultry. Those wishing to use poultry in experiments or those advising on disease and management problems should work through Dr. Ngou. Dr. Ngou should see that the poultry are managed properly.

The short tenure of researchers at the Mankon Station is a real problem. If the government of Cameroon does not encourage researchers to spend a long tenure at the station, the Mankon Station will never become a great and useful experiment station for poultry for the country of Cameroon.

The Mankon Station is a training center and an experiment station. It should be an example of proper management and production at all times. Experiments conducted without proper management will not reach their objectives. The number of technicians and workers are adequate to maintain a top-rated training center and experiment station.

Distribution of Poultry

The Mankon station has distributed poultry to small farmers in the area. The commercial egg producers in the area are purchasing their birds from other local hatcheries or importing improved pullet chicks from France. The Mankon Station has a large hatching capacity but the incubators are not functioning. There is a real lack of hatching eggs from high quality improved breeders birds, therefore, the commercial egg producers import their stock from France. The Mankon Station has a great opportunity to get purebred, parent stock, or grandparent stock and supply commercial producers and farm flock owners with superior stock. Superior egg production stock for commercial producers is very important because of the high price of feed in Cameroon. The dual

purpose breeds (White Rock and Rhode Island Red) are entirely adequate in back yard flocks for small farmers.

There are several private hatcheries in the Bomenda area including a modern hatchery with a one time capacity of 14,000 eggs. The hatchery is in operation but a dependable source of hatching eggs from quality breeders is not available. Hatching eggs are available from several flocks but the breeding is not suitable for commercial egg production. With the entry of chicks from this larger privately owned hatchery into the market, there is less pressure on the Mankon Station to distribute baby chicks.

Maintaining quality breeding stock and replacing them on a regular schedule after 10-12 months of lay will enable the Mankon Station to distribute superior chicks or hatching eggs for back yard flocks and commercial production.

Distribution of Poultry Management Information

An excellent poultry management guide, "Instructions for the Beginning Poultryman", has been developed by IRZ-HPI. It is applicable to small producers but not to commercial producers. It is too large for distribution directly to small farmers but serves as a training guide for them. A brief management guide for distribution to small farmers and other extension aides should be developed by the researchers at the Mankon Station and their counter parts in HPI.

A sustained extension program for poultry has not been developed. The short tenure of scientist at the Mankon Station and HPI and a lack of participation of the Ministry of Livestock make the development of a lasting extension program unlikely. It is imperative that scientist at the Mankon Station develop poultry management guides and assist the

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Ministry of Livestock in training extension workers rather than participating in extension work directly with farmers except extension related to the distribution of chicks.

Feed Situation

Feed of good quality is not available in Cameroon on a sustained basis. Corn is available in limited quantity at harvest but it becomes scarce and of very low quality during other parts of the year. Storage of corn at harvest is a must to supply feed to producers the entire year. Soybean meal must be imported. A limited quantity of dried fish for fish meal is available for addition to poultry rations. Cottonseed meal, palm kernal cake and peanut meal are available on an irregular basis but the protein quality of these meals is too low for their use as the principal protein supplements in poultry rations for commercial production. A limited quantity can be used in poultry rations. Casava, molasses, palm oil, bananas, plaintains and other locally grown foods may be dried and used in rations for commercial poultry. They are all low in protein and their value is greater as human food than as food for livestock. All of the locally grown food crops and by products may be used in undried form for small farm flocks where high production is not required.

Feed requires the greatest capital input and quality feed is not available on a sustained basis, therefore, it is the greatest production problem for commercial egg producers.

Because the nutrition of broilers is more critical than for layers, it is doubtful that a broiler enterprise based on local feedstuff will be possible in the foreseeable future.

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Dr. Ngou has the training to find solutions to the nutrition problem of poultry in Cameroon and make recommendations to poultrymen and the government. This will be accomplished only if the tenure of Dr. Ngou and other researchers at the experiment station is long.

MANAGEMENT GUIDES FOR SMALL FARMERS IN CAMEROON

1. You may purchase improved chicks from the Mankon Station.

2. You may place the chicks under a local broody hen or warm them with a kerosine lamp. Treat the hen for lice before she is given the improved chicks.

3. Provide a shelter for the poultry. The shelter may have a dirt floor with litter or a bamboo floor.

4. Provide feeders designed to prevent the birds wasting feed.

5. Provide a clean source of water at all times.

6. If you expect rapid growth and high egg production from improved poultry, you must feed a complete feed. Small flocks of dual purpose birds (Rhode Island Reds, White Rocks, or local poultry) will eat the same type food you eat and find food in the compound. They will grow slowly and produce fewer eggs.

7. Provide one nest for every 5 hens. Place the nest in the poultry shelter or in another safe place.

8. Produce clean eggs by keeping the shelter and the nest clean.

9. Store the eggs in a safe, cool place until they are sold.

10. Market all cocks and old laying hens alive.

11. Vaccinate your chickens to prevent disease. Contact your extension agent for the vaccines.

12. Contact your extension agent if a disease appears or other problems arise in your poultry.

Report of Findings

Small Farmer Livestock and Poultry Project
631-0015
Northwest Cameroon

by

Lowell B. Catlett, Associate Professor
Department of Agricultural Economics and Business
New Mexico State University

Although the economic objectives of the project are not clearly spelled out in the project's Operational Program Grant Proposal, references to economic activities leads me to conclude the following economic objectives exist:

1) Increase availability -at a reasonable cost-of dairy products, eggs, and meat.
2) Cooperatives developed
3) Distribution system for food products will be expanded
4) Cash income to farmers will be increased

My observations to date show that in general the objectives are being met, some more rapidly than others, but nonetheless moving in the direction of being met. The question of whether the objectives will continue to be met after project termination is not as easy to answer, but will be addressed at various points throughout this report.

The first objective of increasing the availability "at a reasonable cost" of dairy products, eggs, and meat can be quantitatively measured only by volume and not "at a reasonable cost." "At a reasonable cots" is a phrase economists use only with a list of accompanying assumptions, otherwise it is a value judgement that is impossible to measure. A list of assumptions needs to be added to the project statement, or the phrase dropped. My observation is that raw cow's milk is now available, although only about 90% of the volume available for sale is sold, more eggs and chickens are available than existed two years ago, and rabbits are being consumed where none were before. Whether this has been "at a reasonable cost" is subject to debate with no answer.

The second objective of developing cooperatives is presently being met with the milk marketing cooperative. Mike Goldman has developed a record keeping system and assisted in training the farmers in operating the cooperative. The cooperative currently picks up the milk, distributes it and distributes feed.

The expansion of the distributional system for food products, with the exception of the milk route, has not been achieved mainly due to a lack of volume of the products. Limited work has been done with chickens, eggs, and rabbits in providing information about availability, much remains to be done.

Cash income to poultry farmers has been increased, rabbit and dairy farmers marginally so in <u>absolute terms</u>. In <u>comparative terms</u> or <u>opportunity</u>

cost terms not enough data exists to evaluate. That is, do the farmers have more real income now than before they began the projects? Not enough information exists to answer that question properly nor has the projects' elapsed time been long enough for that type of analysis.

Previous Work

Project economist Mike Goldman has published three memos on cost and returns for dairy cows, laying hens, and dairy goats.

1) Costs and Returns to Small Dairy Farms in Northwest Cameroon
2) Costs and Returns to 100 Hen Laying Flock in Northwest Cameroon
3) Costs and Returns to 2 and 4 Doe Dairy Goat Herd in Northwest Cameroon

He has proposed an additional one:

4) Costs and Returns to Broiler Production Using a Dual Purpose Breed

The three published memos have used enterprize budgeting techniques for project participants. Mr. Goldman's objective was to show small farmers that participated in the program whether the project was economically feasible. As such, his budgets contain subsidized prices which are relevant only to farmers that participated in the program and not for other farmers. Perhaps the titles of the memos need to reflect this so as to not misrepresent the contents.

Mr. Goldman used a combination of cross-sectional data and an engineering cost approach to calculate the enterprise budgets. Considering the data limitations this was probably the wisest choice and follows the conventional wisdom employed in the United States for enterprise budget formulation.

Considering the original objective of providing cost and return analysis to program participants, the underlying assumptions of the budgets seem reasonable. The production assumptions seem fair except for milk production which has proved with additional data to be a bit optimistic. The assumption about the time value of money is probably accurate for the area.

Suggested Areas for Improvement and Additions

1) Subsidized prices and disallowances for depreciation need to be identified and properly explained so as not to confuse the reader.

2) All calculations need to be shown and explained. Although most of the information necessary to understand the budgets was in the report it was difficult to find and hard to follow.

3) A more standard format for the enterprise budgets is suggested. This would involve breaking the expenses down into cash expenses (variable costs) and non-cash expenses (fixed costs and opportunity costs) and labeling the returns as: Returns Above Cash Expenses (variable costs) and Returns to Land, Labor, Capital, and Management, such as:

Best Available Document

Enterprise Budget

Income	_____
Cash Expenses (variable expenses)	_____
Returns Above Cash Expenses	_____
Non-Cash Expenses (fixed and opportunity costs)	_____
Returns to Land, Labor, Capital, and Management	_____

This format lets the farmer see the out-of-pocket cash expenses and the returns above or below them and lets him see the returns to his land, labor, capital and management. This reduces the assumptions necessary to do the analysis and then lets each user of the budget make his own assumptions about what value he places on each of the items. Some farmers may not have a land charge but others may have to remove land from some other productive use. Some farmers may have large families and thus a low labor charge, but others may not. Similarly the time value of money may differ.

4) Because of the risk averse nature of most farmers, sensitivity analysis needs to be added to the budgets. The major variables of production output, price of output, and feed costs need to be varied over some range to not only give the farmer an idea of what to expect but to provide him guidelines to improve his production practices. If a farmer can see in money terms the value of less mortality or higher egg production he may be more readily convinced to alter his management practices. It may induce him to more aggresively seek better markets both for his output and inputs.

5) The next economic analysis that is in order after the initial enterprise budgets is partial budget analysis. Once a farmer has selected a particular enterprise he will modify that enterprise in various ways and/or consider adopting another enterprise. Although this is usually done mentally without a standard format because the calculations are usually simple, the use of a formal format usually results in a more complete listing of income and expense changes. This analysis is of particular help in evaluating whether to sell 1-day old chicks, or 1-month old chicks (or any age), whether to raise chickens as layers or as broilers, whether the extra expense of feed is justified by output, etc.

A possible format to use is:

Partial Budget

Reduced Expenses	Increased Income
Reduced Income	Increased Expenses

If the total of Reduced Expenses plus Increased Income is greater than the total of the Increased Expenses and Reduced Income then the project is feasible, and vice versa. This type of analysis is by far the most widely used and beneficial management tool used in the United States. However, this analysis is possible only with some production information and good cost and price information. Hopefully before the project terminates enough production function information will be available to do the analysis.

6) Simple breakeven analysis needs to be performed on the cost of operating the milk route to get a handle on the volume necessary to sustain the route and the charges needed for cooperative memberships.

Strategies for Small Farm Management

The first step in effective farm management is record keeping. Mr. Goldman has helped some farmers devise a simple income and expense system and production records. This is the fundamental cornerstone and I would encourage Mr. Goldman to continue his efforts. To this I would add two other tools, both mentioned previously, sensitivity analysis and partial budgeting. Properly done, sensitivity analysis provides a monetary incentive for farmers to develop better production management techniques, control expenses better, and seek alternative markets. Partial budgeting provides the structured framework to analyze changing production practices, additions and/or deletions of enterprises, alternative markets, and capital purchases. The three techniques are simple and effective with an excellent record of success. They have been used successfully throughout the world including Central and South America, Egypt, and with native American Indians.

Milk Marketing Situation

A strong effort is currently being made by Tom Needham and Mike Goldman in establishing a dairy industry in the Bamenda area. Considering their point of origin they have made good progress in production management and have fought to keep a milk marketing system in place. The fact that the pasteurization plant has not worked for the last two years has almost doomed the project. No cost effective milk marketing system can be built without a processing facility. Furthermore the relative prices between feed costs and milk prices does not favor a viable economic industry. The quantity and quality of grain, concentrates, and forage is extremely poor and as a consequence has a high price relative to the price of milk.

If the processing plant does get operational, how long will it continue? The evidence suggests that if one small part keeps it down for two years then it will not likely run on a continuous enough basis to process milk. In spite of heavy subsidies of cattle, collection and marketing, training, and sometimes feed the returns to farmers are still marginal.

A small local dairy industry will exist as long as the subsidies continue and as long as there are dedicated individuals like Mr. Needham and Mr. Goldman to help. However, the long term economics do not under any circumstances favor a dairy industry in the Bamenda area. The major problem is the relative prices between feed and milk. The second problem is the high cost of collecting, processing, and distributing the milk from small, scattered dairy herds. Even

if all of the major production management problems can be brought under control the two problems mentioned previously outweight any increases in production efficiency. The long term outlook for a viable dairy industry in the Bamenda area is nil.*

Comparison Analysis

Poultry - Egg and chicken production is profitable enough to have attracted several people into the business without subsidies or inducements. However, the local market will soon be overburdened with supplies relative to demand such that prices will fall and new markets sought. The population to the south offers market potential and if it can be developed may provide the necessary market area to keep the poultry industry on a modest growth curve in the Bamenda area.

Rabbits - A relatively new addition that appears to have promise as a small cottage industry that may raise the protein levels of families and provide some small cash income.

Sheep and Goats - Not enough information to evaluate

Dairy - See above

Beef Cattle - Will provide limited income because of lack of adequate pasture for most people in the area. More land needed than is available for the majority of the farmers.

Traditional Food Crops - The traditional food crops (corn, yams, potatoes, cocoyams, cowpeas, field beans, etc.) will continue to be food crops for many but will also become cash crops as the population becomes less rural and more urban. This will also cause a reluctance to enter livestock operations. The smaller production, capital, and cash flow risk of food-cash crops compared to most livestock operations will result in less willingness to adopt livestock enterprises.

Traditional Cash Crops- Not enough information to answer

Remarks

(1) Refreshing to see an economist incorporated in a technical project from the start. Mr. Goldman has provided the first phase of the economic analysis and done much to advance the economic objectives of the project. The project has now lapsed enough time and gathered enough new information for Mr. Goldman to reevaluate the economic feasibility of various enterprises and to evaluate the economic feasibility of the various enterprises after project termination and/or subsidies.

Enough farmers are now involved in the project to warrant help with record keeping, partial budgeting, and sensitivity analysis. Even if the farmers quit the livestock business the training will not have been in vain because the concepts can be applied to any enterprise.

Mr. Goldman has worked to help farmers with record keeping and getting the milk marketing coop operating in a more business-like fashion. In addition he has become a valuable information agent and can provide additional

* According to IRZ, studies have shown the viability of the dairy industry.

help with developing new markets and information sources. Much economic work remains to be done now that a base has been established by Mr. Goldman. I would encourage the project to retain the services of an economist until project termination.

(2) Several farmers we visited complained about the dumping practices of I.R.Z., i.e. the selling below market price of chickens, eggs, and rabbits. This has caused friction and is a valid complaint. It demoralizes farmers and should be stopped. The short run benefits of cheaper meat and eggs to consumers does not outweight the long run cost of losing the livestock production base.

Report of Findings

Equatorial Guinea

by

Lowell B. Catlett, Associate Professor
Department of Agricultural Economics and Business
New Mexico State University

The poultry project on the island should be continued despite several major problems, most notably the currency exchange and feed situation. My recommendation is based solely on the strength of the projects manager - Tom Wetsel. Tom is outstanding. Not only is he a good technical manager but an excellent financial manager. If the project will work it will be entirely due to Tom.

General Observations

(1) Until the currency situation is solved almost no project will be worthwhile nor can the country expect to improve its agricultural output. The difference between official and unofficial exchange rates is a factor of 6 which translates to a 600% tax on the cocoa producers. A floating currency hurts in the short run but has long run benefits.

(2) Technically and economically the idea of growing feed grains on the island is not sound. Efforts should be concentrated on the cocoa, vegetables, and small poultry operations.

(3) If the currency was allowed to float and the cocoa industry revived, the island could earn enough foreign exchange to finance imports.

Tom has done great things considering the obstacles he faced both within his project and outside his project. His poultry operation is off to a good start and he has taught several people how to raise and sell vegetables. He is doing more to help the people of E.G. than any we met or observed. Truly an outstanding effort.

Best Available Document

8

OBSERVATIONS ON THE AGRICULTURAL ECONOMICS ELEMENT
OF THE SMALL FARMER LIVESTOCK AND POULTRY PROJECT

The project is to be congratulated on the start made by the Agriculture Economist with on-farm analysis and the overview study of the economics of livestock production in the Northwest Province. The budgets prepared on dairy cattle and poultry operation are useful. However, several changes can be made in the Farm Management Program to make the information collected, and analysis completed more useful to the small farmers, the project and IRZ.

My recommendations are as follows:

(a) The small farmer record book should be expanded to include all farm enterprises. It is not possible to complete an analysis of a small dairy operation if the other enterprises on the farm such as maize, beans, vegetable production and other livestock are not included in the farm records. The Agriculture Economist has an excellent opportunity to collect and analyze farm records from 20-25 farmer cooperators. This will be "real" data measuring the inputs in the form of land, labor and capital and also the outputs from the small farms.

(b) Sensitivity analysis should be completed on the various livestock enterprises to determine their profitability with and without subsidies.

(c) A systematic collection of market prices should be completed (probably monthly) throughout the year in order to assess shifts in prices and demand throughout the year.

(d) Efforts should be made to estimate forage and pasture yields on the small farms and also the cost of producing a kilo of forage.

(e) Individual meetings should be held with farmers to discuss the results of the farm record analysis at the end of the year and to also make recommendations on how they can better manage their small farms.

(f) Farm record data should also be used to evaluate project recommendation and the overall profitability of dairy cattle and other enterprises in the region.

The Agriculture Economist has an excellent opportunity to do some very useful on-farm analysis with the dairy and other livestock cooperators associated with the project.

William F. Litwiller
Chief, Agriculture and Rural
Development Officer
USAID/Yaounde

May 13, 1983

APPENDIX H

Analysis of Pricing Structure

As seen in the following table, IRZ sells a number of the animal products it produces below market prices:

Product	IRZ Price	Market Price
Table Birds	500 F/kg	750-1 000 F/kg
Live Hogs	450 F/kg	500 F/kg
Pork	700 F/kg	900-1 000 F/kg
Day Old Chicks	140 F.ea	150 - 160 F.ea
Rabbits	600 F/kg	1 000-2 000 F/kg

This is obviously counter productive to the goals of IRZ which are to increase the quantity and quality of animal products available at a reasonable price to the nation. Farmers need incentives to produce. Rather than providing incentives, IRZ, as a subsidized producer, is unfairly competing in the market place and there by providing disincentives. A couple of examples illustrate this.

IRZ has a committment to provide breeding stock at subsidized prices. This is fine when an industry is starting and there are few, if any producers. It is not necessary when private producers exist. IRZ sells hogs as breeding stock, feeders, and for market at a low price. There are private farmers who have acceptable quality animals, but they cannot afford to sell at IRZ's price. However, buyers come to these people and often refuse to pay more.

The situation with day old chicks is also problematic. IRZ is underselling the market by 10 F. Its hatchery is operating at approximately 14% capacity because of equipment failures, so other producers have selling opportunities.

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However, 10 F/chick is likely enough to induce buyers to switch producers. This price differential could produce problems for competing hatcheries when IRZ's facility becomes fully operational.

This is only part of the problem. Because of excess capacity in Bamenda, IRZ should not even be in the business. A private hatchery exists with modern equipment and 42,000 chick/month capacity. The operator has demonstrated a capability to keep the equipment running. There is not room for two large producers in town. the real contribution IRZ could be making to this segment of the poultry industry would be to supply this private operator, and others, with quality hatching eggs. Before IRZ entered the hatching business, they were doing this. When they started to need their own eggs, others got cut off. This private hatcher has been forced to produce his own hatching eggs. Unfortunately I don't believe he can produce as good a product as IRZ. He should be in the hatching business and IRZ in the hatching egg business.

In all fairness, I do not think that IRZ, HPI, or AID were aware of this individual's plans when they were planning IRZ's facility. However, the fact remains that it is redundant, and a subsidized government producer is competing with a private producer. I have heard rumors of a planned MINEL hatchery in Bali. I hope AID is not planning any role in it, and perhaps could discourage other potential donors.

In summary, I believe these examples illustrate the point that IRZ's pricing policies are counter productive in terms of achieving its goals, and that the effects of the Institute's position as a production facility has to be closely watched.

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Other examples exist as well. I once mentioned some of the above to IRZ's Director; the comments were not enthusiastically received. Since AID works closely with DGRST and IRZ, it should be aware of these market situations in the North West, and perhaps through its own channels bring about some change.

2

REPORT OF THE FORAGE AGRONOMIST CONSULTANT TO HPI BASED ON A REVIEW FROM MAY 13 TO 19, 1983

At the Bambui Research Station I reviewed both IRA and IRZ programs. The agronomic findings are important since a close relationship between crops and livestock should be encouraged in all developing countries. Crop residues may be valuable forage during periods of critical livestock nutrition. For example, rice straw has been found to be a good maintenance ration for both 1 and 2 years old heifers even though this forage is commonly not utilized or underutilized in most African countries. Corn stover is another crop residue in Cameroon which might be useful in the dry season if promptly harvested, properly stored and fed before losing its nutritive value.

Didear Roosval, Agrostologist IRZ Bambui, spent one day with me explaining his results from forage plots off station. He has made excellent progress in identifying suitable forage germ plasm. At least five grasses: Brachiaria, Giant Stargrass, Guatemala, Guinea and Rhodes are performing satisfactorily in one or more ecological zones representative of North West Cameroon. Likewise, five legumes-three Desmodiums; distortum, introtum and uncinatum, two Stylosanthes; guianenses and scabra - look promising after several years of propagation.

I suggested to Mr. Roosval that he add some accessions from CIAT, Colombia, South America which have outyielded commercial Austrialian cultivars of Stylosanthes 2 to 1 or 5 metric tons per hectare versus 2 1/2 metric tons per hectare in the Gambia.

After this field review of forage work and dairy pastures at Bambui a meeting was held with Mr. Roosval and two HPI team members, Michael Goldman and Chuck Talbot. During our discussion a forage calender was proposed to better understand the potential for each grass and legume component of recommended forage. This calendar can be prepared with the help of the agrostologist and would have a tabular format as follows:

Species	Month of the year											
Grasses	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March
⋮	———	———	———	———	———	———	———	———	———	- - -	- - -	- - -
⋮	- - -	- - -	- - -	- - -	———	———	———	———	———	- - -	- - -	- - -
				etc								
Legumes												
⋮												
Mixtures												
⋮												

.../...

The table starts with the beginning of the wet season and extends through the end of the dry. Under each month the contribution of each species and mixture is rated, major by a solid line, minor by a dashed line, or not at all by a blank space. A record of these relative performances of each cultivar would provide a sound basis for planning pasture improvements to meet the objectives of providing high quality wet or dry season forage or combination of these two alternatives.

Recommendations made for general improvement of the dairy pastures at Bambui are as follows:

1. Manage wet season production of grass-legume mixtures (cut and carry green chop or silage) to promote high quality regrowth in the dry season which may be either grazed or cut for hay.

2. Prepare good seedbeds when planting new pastures. Select high quality sites with good and gentle topography for establishing grass-legume mixtures. Plant grasses and legumes in alternate rows with one meter spacing between rows of Brachiaria and Desmodium.

3. On shallower soils and steeper slopes Stylosanthes could be established in native grass stands where bare soil can be tilled and the seed planted in rows. Where conventional seedbed preparation is not feasible, a burn and broadcast seeding into the ash before the onset of rains may be a useful technique for introducing legumes. Another possibility might be heavy grazing prior to and right after seeding the legume. These trials should be undertaken on small areas to test their feasibility before applying on a large scale.

4. Form a team with the forage agronomist/agrostologist, to incorporate his ideas into pasture establishment and grazing management practices for both large and small holder livestock operations.

5. Develop a grazing system to keep milking cows on the best pastures near the barn with replacement heifers, dry cows, and bulls in the outlying pastures.

6. Begin all renovation programs by concentrating on small areas with good seedbed preparation and careful grazing management to improve and maintain the planted species after establishment.

7. Use fertilizer or manure applications to improve grass stands and avoid these amendments to encourage legumes composition of pastures.

On May 16 I spent the day reviewing small holder pasture problems with Mr. Goldman and Mr. Talbot. Notes were taken of the conditions found on each farm and recommendations made verbally to each landowner and the HPI team members. These are summarized in the report for further reference when working with these and other holders with smilar problems.

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Name of Livestock Owner	Field findings	Recommendations
Sebastian Ngufor	Brachiaria without legume. Appears to understand the grazing, fertilizer interactions in grass-legume mixtures.	Put rows or lines of Desmodium into open patches of Brachiaria. Fertilize to encourage improved species and remove grazing animals when use too heavy on Brachiaria.
Clement Akoi	Broadcasted grass and legumes together. Planted Guatemala grass in too dense a stand.	Plant 1 row of Desmodium down each ridge. Transplant one-half of the Guatemela grass into a new area. Fertilize and graze to improve other pastures.
Michael Tamuanca	Good stands of improved forage with only 2 animals. Currently staking the animals to get even use on native grasses.	Must harvest surplus for silage or green chop to get regrowth in dry season. Good potential for pasture improvement on slopes.
Stephen Atie	Numerous patches of bare soils in small paddock near barn. Guatemala grass planting in draw below spring.	Introduce Desmodium in rows on old cow trials and small patches of bare ground. Finish Guatemala grass planting soon.
Joe Neba	Dense stand of Guinea grass in field near barn. Scattered plants of Stylosanthes and Desmodium where seed was broadcast.	Expand Guinea grass planting by thining. Prepare seedbed for Desmodium and Brachiaria accross fence from Guinea grass. Put Brachiaria in furrows and Desmodium on ridges 1 meter apart. Stylosanthes on steep slops after burning.
Thaseus Tita	New location for pasture improvement. Brachiaria heavily grazed.	Clear all vegetation and seed Desmodium in rows. Remove animals from Brachiria and fertilize for good recovery of grass.
Jiji Gambo	Open spaces in night paddock of Brachiaria. Start tractor plowing in lower pasture. Woody plants present in most pastures.	Sod Brachiaria into open spaces of night paddock. Make rows meter apart. Continue process after new material has started. After clean tilling seedbed in lower pasture seed alternate rows of Guinea grass and Desmodium or Seteria and Stylosanthes. Improve remaining pastures by clearing woody plants and introduce improved species in distrubed areas.

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On May 17 I toured the pastures on the Mankon Station with Joe Howell who has pioneered work in pasture improvement on his station. He was able to show me field plantings of Guatemala grass and Brachiaria along with seeding of Desmodium, Seteria and Stylosanthes at the sheep and goat barn. Stylosanthes guianenis has done well in a seeding made in 1982 in rows. This year new seedlings are becoming established between the original rows. All these species need grazing or cutting during the wet season and an electric fence might be useful in accomplishing desirable grazing pressure on the wide variety of forages within a single area. Joe's work convinced me that Brachiaria and Desmodium form a usable mixture and that Seteria and Stylosanthes appear to be compatible components as a grass-legume mixture for shallower soils and poorer sites. I would recommend Brachiaria and Desmodium be planted with 1 meter row spacing and 50cm spacing between rows for Seteria and Stylosanthes.

One of the immediate needs on the Mankon Livestock farm is a manure spreader to more uniformily distribute a large supply of valuable nutrients to the pastures. Manure together with grazing can be a useful tool in maintaining an approriate balance between grasses and legumes in each unit. Spreading could be done regularly in the wet season but some stockpilling in the dry would be needed to avoid burning the vegetation with fresh dung. Near the end of the dry season applications could be timely to take advantage of the first rains.

In visiting with Dr. Nielson I reiterated the need for good combinations of grasses and legumes plus careful management to maintain the legume-grass composition desired.

In discusions with Joe Howell I recommended entertaining a pasture-silage program to lower populations of internal parasites. Briefly, by breaking the life cycle of parasites by alternately grazing and ensiling, the animals would be insured of grazing areas with low populations of worms. This technique, if feasible, would reduce the need for frequent deworming.

Discussions with Steve Lukefahr at the rabbitry indicated a need for high quality legume leaf meal for rabbit rations. We have produced a high quality groundnut hay in the Gambia by planting a dense stand for harvest in the dry season. Leaves can be retained by immediately windrowing and stacking after several days of drying in the field. The slow drying process enables you to produce a green, high quality leaf material comparable to second cutting alfalfa in the U.S.A. Feeding trials with rabbits could be initiated on several grasses and legumes that do well in the dry season to determine if specialized forage production for rabbits is justified.

Principal recommendations for forage program at Mankon.

1. Acquire a silage harvester
2. Acquire a manure spreader.

These two capital investments would greatly expediate the sheep and goat programs. A field silage chopper would improve management of grass-legume mixtures by enabling the manager to harvest and store excess forage growth in the wet season. Regrowth from areas harvested for storage in a trench soil would provide high quality forage for dry season grazing.

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Likewise a manure spreader would save valuable plant nutrients by returning them to the soil and the placement of manure could augment grazing and silage cutting as a means of improved pasture management.

3. Seed high fertility, good site quality areas to Desmodium and Brachiaria. Lower quality, less fertile sites can be improved by using wet and dry season grazing.

4. Harvest excess forage, particularly from Guatemala and other high producers, in the wet season for silage.

5. Combine grazing, fertilization (primarily manure) and silage cutting to control balance between grasses and legumes in recommended forage mixtures.

6. Attempt hay making in the early dry season to provide high quality legume hay from groundnuts, Desmodium and Stylosanthes. Seed from the the forage peanut developed in Florida, which is called Florigraze, should be obtained for trials in Cameroon.

In summary, there is an excellent potential for high quality year around forage in Cameroon. Small holders in dairy, sheep and goats and rabbits have excellent prospects for developping a year around supply of high quality forage. There is a need to foster coordination between crops and livestock, increase on-the-farm research trials and to emphasize the role of grazing and fertilizing in the development and maintenance of desirable grass-legume pastures.

Don Hedrick
Forage Agronomist
HPI Consultant
May 19, 1983

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Reçu - Received

YAOUNDE, LE 18 AVR. 1983

LE DIRECTEUR DE L'IRZ,

118

MINISTERE DE L'ELEVAGE, DES PECHES
ET DES INDUSTRIES ANIMALES

DELEGATION GENERALE A LA RECHERCHE
SCIENTIFIQUE ET TECHNIQUE

REPUBLIQUE UNIE DU CAMEROUN
Paix - Travail - Patrie

N° 0 3 6 4 /MINEPIA/DGRST.

NOTE DE SERVICE CONJOINTE

aux - DELEGUES PROVINCIAUX DE L'ELEVAGE DES PECHES ET DES INDUSTRIES ANIMALES
- CHEFS DES CENTRES DE L'IRZ
- CHEFS DES STATIONS DE L'IRZ
- CHEFS DES SECTEURS DE L'ELEVAGE, DES PECHES ET DES INDUSTRIES ANIMALES.

Objet : Modalités des concertations périodiques entre les services extérieurs du MINEPIA et de la DGRST.

Direction I. R. Z.
Arrivée le 13 AVR. 1983
Enregistrée sous le 2175

Compte tenu de la nécessité d'assurer une étroite liaison entre la Recherche et la Vulgarisation, liaison qui permet à l'IRZ de connaître les besoins et les priorités du MINEPIA et aux services techniques de ce département de diffuser rapidement les résultats de la recherche. Les Services extérieurs du Ministère de l'Elevage, des Pêches et des Industries Animales et de la Délégation Générale à la Recherche Scientifique et Technique sont tenus de se réunir tous les trois mois, pour faire le point :

- sur les travaux de la recherche ;
- sur les modalités de diffusion des résultats acquis ;
- sur l'impact de ces techniques en milieu rural ainsi que leurs contraintes.

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Toutes les actions de diffusion des produits de la recherche (poussins d'un jour, porcelets, semences sélectionnées ..etc...) ainsi que le choix des éleveurs pour l'expérimentation de ces techniques se feront après une réunion des responsables composée comme suit :

- *d'un Chef de Centre ou de Station (I.R.Z.)*
- *du Délégué d'Elevage ou de son représentant (MINEPIA)*
- *du Chef de programme (I.R.Z.)*
- *des Chercheurs intéressés (I.R.Z.)*
- *du Chef secteurde MINEPIA.*

Les procès-verbaux des réunions trimestrielles prévues ci-dessus seront régulièrement envoyés au Ministre de l'Elevage, des Pêches et des Industries Animales et au Délégué Général à la Recherche Scientifique et Technique./-

YACUNDE, le 7 Avril 1983.

LE DELEGUE GENERAL A LA RECHERCHE SCIENTIFIQUE ET TECHNIQUE,

NOMAH NGU

LE MINISTRE DE L'ELEVAGE, DES PECHES ET DES INDUSTRIES ANIMALES,

YANG Luc

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For presentation to USAID staff,
Yaounde 4 March 1983

by Thomas D. Needham
Heifer Project International
Dairy Advisor

I. Progress of IRZ/HPI/AID dairy program to date

The history of HPI's involvement in Cameroon is well documented. A small shipment of cattle and one dairy advisor arrived at Bambui Station in 1974, followed by another larger shipment and a second advisor in 1976. The first four years were spent primarily in establishing the milking herd at Bambui and in developing a working relationship with IRZ. A third advisor came in 1978 and succeeded in getting two small dairy farmers started.

By 1980 when I arrived, the program was ready to go toward the initial extension phase of the project. A distribution plan enabling low resource farmers to receive animals was worked out between HPI and IRZ, a training program was established and cows began to be distributed. Since then another shipment arrived making a total of approximately 140 animals from the three shipments. Nearly 100 animals have been distributed to approximately 30 farmers and mission station farms. These animals have increased to nearly 200 animals on the farms.

The Bamenda Dairy Cooperative Society was started in 1981 and has come a long way in meeting farmers' needs for dairy production. The cooperative began under the farmers' own initiative. It is supplying farmers with feed on a monthly basis and collects and sells the farmers' daily milk production. In addition the cooperative membership meets monthly to discuss common problems, receive recurrent training in dairy production, and to encourage one another. The dairy program is truly a cooperative one which

a single purpose. Although HPI has been actively involved in the cooperative, the organization is the farmers' own and it offers an excellent opportunity for us to assist them in further establishing their own program.

There are an estimated 500 children drinking milk daily who would otherwise consume very little protein on a regular basis. These children include many orphans, the farmers' families, children of laborers at Bambui and customers in Bamenda.

Individual farmers are finding themselves gainfully employed in a satisfying, worthwhile profession which has elevated their status within their communities. Although most farmers are still in the start-up phase of their operations, they are expecting to net at least what they could expect from full-time off the farm employment if that were available to them. This is in addition to the build up in equity which nearly all farmers have been experiencing.

The project participants have many times expressed their gratitude for the benefits they have received through the close contact with the Heifer Project staff which has shown concern for people as individuals.

Some of these benefits are tangible, some are not, but they all point out what is happening to the low income population involved in the IRZ/HPI/AID dairy program.

We have to keep in mind that our target population--those low income farmers who do have the basic resources such as land and a small amount of working capital--has a very low level of education. They have very little business experience. Most of them have never before been involved with any type of successful, income generating agricultural operation of any kind. This type of farm enterprise is entirely new to them. Most of our farmers have never owned a cow before. Considering these factors, it is

impressive that these farmers

their life-styles, their work habits, their management, and their attitudes about themselves and their future. Most of these changes have taken place in only 3 years or less.

A new livestock farmer in the United States will find that it takes at least 5 to 6 years to establish his operation as a profit making enterprise. Most new farmers in the U.S. have the advantages of a degree, a life-time of experience in the particular agricultural specialty they are engaged in, adequate credit, and a full complement of agricultural support services and facilities, including veterinarians, farm supply outlets, running water, electricity, vehicles, good roads, extension service, readily available markets, etc.

Most of the farmers we work with here have none of these. Therefore we should not find it surprising if at least the same 5 to 6 years are required before an African farmer will reach the point at which he is securely established in his dairy business. During these years, the farmers need as much advice, encouragement and support as possible, yet they have to be allowed to progress at their own pace and make their own mistakes. Through this gradual advancement, the individual farms will develop as viable enterprises.

Because of the limitations, we will probably not see any large scale dairy production units operated by subsistence farmers. There may be a few progressive individuals who could produce milk from 10 cows. Perhaps one or two could conceivably reach a level of 15 to 20 producing cows. But because of constraints of inputs, support services, and personal capabilities, most farmers will probably not have more than six to seven milking cows.

The management of the dairy here on Bambui Station still has room for improvement. Expatriate staff were actively involved

been so[illegible]y respons[illegible] herd. [illegible] was not always easy for the IRZ staff to guarantee that all the needs of the cattle were met. Pastures were not adequate for the number of cattle on the farm, feeding budgets were too low, and general management practices were sometimes not carried out well. However, the herd has remained generally healthy, the cows reproduced, and milk has been produced and marketed. The biggest disappointment has probably been the overall low level of milk production by the cows on Bambui Station. However, it appears that IRZ has made a new commitment to increased levels of management and milk production. The new Chief of Center and the research staff have been cooperating and are rectifying some of the management deficiencies. In the long run, the IRZ dairy operation will be managed better due to their struggles to figure out and solve the problems than it would have been had HPI staff continued in an active management role.

The development approach taken by HPI in the dairy program has been a gradual one. It was not known at first whether exotic cattle would do well in Cameroon, therefore only small numbers of cattle were shipped. After it was found that dairy cattle performed satisfactorily it was not known whether they would do well off the government farm in the hands of small farmers, so the initial distribution was limited.

Now we have seen Holsteins, Jerseys, and crossbreds performing well with small farmers and we are ready to expand the program as we are able in the Northwest.

The progress made up to this point has been a result of the cooperation between HPI and IRZ. Basically, IRZ supplied the personnel and the facilities at Bambui and HPI supplied personnel and animals. Beyond supplying the animals (AID paid for transportation) and supporting expatriate staff, the HPI/AID finan-

II. Future direction of the IRZ/HPI/AID dairy program

At this point we are faced with several constraints which threaten the progress of our work. These constraints include the lack of adequate pastures, cattle numbers, extension service, veterinary service, and a milk collecting, processing, and marketing system.

Much progress has been made in the area of pastures. This is probably the constraint with the easiest remedy. The dairy farmers have now realized the need for high quality pastures and other forages. Each of them has made varying amounts of progress in this area. IRZ has made grass cuttings and seeds available on a limited scale. Once a farmer has established small plots of Kikuyu grass, Guatemala grass, bracharia, desmodium, or others, he can multiply his own plantings each year. A shipment of forage seeds has recently arrived from Australia. These seeds will be used to help each farmer establish a small area of improved pasture. Fertilizer will also be introduced. The pasture improvement program is well underway and the rate of expansion will increase each year. A well established pasture program on a farm requires several years to develop and needs ongoing attention to maintain it after that, but it will limit the need for feeding of expensive grains to the cattle, causing both an increase in the level of milk production and a decrease in the cost per liter of milk production.

The distribution of cattle to farmers has nearly exhausted the supply of available animals from the IRZ Bambui farm. There is a limited number of young stock which will be available later this year. The milking herd of 50 animals at Bambui is not capable of producing many heifers for distribution. A well-managed herd of 50 cows will produce up to 25 heifers per year. One-half of those are required for herd replacement leaving only

There are two options for getting more animals for distribution to farmers. The first is a short term option and the other will contribute more in the long run. We should consider both options.

An immediate solution to the shortage of cattle for distribution is to bring in another shipment of cattle from the United States. If a shipment of 80 to 100 heifers were scheduled for mid 1984, farmers could obtain training and prepare their farms to be ready for the animals when they arrive. The shipment should be approximately 75% Jerseys and 25% Holsteins to best meet the farmers' needs. (Despite the fact that Holsteins have the genetic ability to produce more milk than Jerseys, the Jerseys have generally adapted better to the local sub-tropical conditions. Jerseys are smaller in body size, requiring less feed and are easier for the farmer and his family to control. Holsteins also do well here, particularly when kept by farmers who have level land and higher management capabilities.)

If the shipment were sent, approximately 20 to 30 new farmers could enter the program with two animals each and the remaining animals could be distributed to some of the other farmers wishing to expand.

The other solution to the cattle shortage situation is to develop an extensive crossbreeding program with the local cattle population. Many of the Fulani cattle raisers have expressed interest in crossbreeding. There are several large institutional cattle herds in the area. Cooperative arrangements could be worked out with the owners of the herds. For example, in return for breeding services, the owner could agree to make 25 to 30% of all crossbred heifer calves available to the program for distribution. If this were done, approximately 120 crossbred heifers would be available for distribution from every 1000 cows

An offshoot from a crossbreeding program would be the opportunity to introduce a number of Fulani families to dairy production. Most of our work up to now has been with the non-Fulani people. These people have been mixed farmers, most have not raised cattle before. The Fulani are the traditional cattle-raisers and according to some feasibility studies (in particular the Danish study for MINEL about 5 to 6 years ago) the Fulani are the ones who would most likely be the primary milk producers. There is a real potential for milk production by the Fulani, but they do present a greater task in terms of the necessity for the completely different type of management required for dairy cows. We have only one Fulani now milking a dairy cow and he shows promise of succeeding. The others we have tried to work with have not shown a willingness to adapt to a different type of management. The non-Fulani have not had to "unlearn" the traditional ways of keeping cows. However, since the Fulani control most of the grazing land, and since they own most of the cows it would seem wise to encourage them to become involved in dairy production.

The Fulani in the Northwest are rapidly approaching a crisis time which threatens their traditional type of pastoral existence. Their dry season and rainy season grazing areas are being cut off because of the increase in acreage under cultivation. A more intensive type of cattle production could make it possible for the Fulani to adjust to less total grazing land area without losing out on income production from their herds. A controlled dairy crossbreeding program could help the Fulani to develop cows which would yield a quantity of milk in surplus of family needs. Along with the upgrading of the cows there would have to be other improvements in management such as better health care, pest control, range management, etc. The Fulani could feasibly produce

m: or pu c consumpt: r crossbred animals with a management system more refined than what is now existing but perhaps not as intensive as the small farmer with very limited amounts of land. The Fulani could probably maintain milking herds of 20 animals or more. There would be real difficulties in transporting and marketing their milk because of the remote location of most Fulani compounds. Alternatives to fresh milk sales such as home production of butter and cheese might have to be considered.

Although purebred cattle have adapted well on many of the farms, crossbred cattle have a real potential for all farmers. A number of crossbred animals have performed well with milk production levels similar to that of Jerseys. Well-managed crossbred cattle have exhibited fewer health problems, shorter reproductive intervals, and faster growth rates than purebred exotic cattle.

Upgrading beyond 50% crossbreeding has been continuing successfully both at Bambui Station and on farms. A number of 3/4 Jersey and Holstein calves have been born. Recently a 3/4 Jersey delivered a 7/8 Jersey calf. This upgrading shows much promise and allows the native cattle population to contribute to the cattle numbers needed for the program.

An extensive crossbreeding program would allow comparisons to be made between Jersey and Holstein crosses and among the various percentages of crossbreeding (i.e. 1/2, 3/4, 7/8, etc.).

Small farmers have the opportunity to purchase a small number of local animals and upgrade them through crossbreeding.

The inputs required to implement such a crossbreeding program include artificial insemination (A.I.) technicians, extension workers to place exotic bulls among local herds, management training for owners of local herds, a thorough record keeping system and a plan for recovering the heifers for program distri-

ment and supplies need to be provided. A.I. technicians would need to be trained. Such a program would require cooperation with and assistance from the Ministry of Livestock.

A crossbreeding program as outlined should begin immediately. However, it will take at least 3 years from the time such a program is begun until the first crossbred offspring begin to give milk. In the meantime a shipment of animals would give the program a needed boost by doubling the number of small dairy farmers.

As the program progresses, farmers will begin to supply each other with breeding stock. When a farmer reaches the maximum number of animals for his management capabilities or for his land area, he will have an excess of animals available for sale each year. Most farmers seem to think that more is better. In order to help some of them avoid future problems from having more animals than they can adequately handle, they will need to be helped to recognize their limits.

The problem of not enough animals should eventually solve itself, because as the total number of animals increases, the number of new animals born will also increase each year.

Besides the work of the HPI advisor, and a para-professional farmer-extension worker, there is no extension help available to the farmers. IRZ staff personnel occasionally help out, but not on a regular basis.

A team of 4 to 6 adequately qualified and motivated extension workers could provide the program with the help it needs to succeed. Efforts need to be continued to obtain this help from MINEL. Workers need to be assigned specifically to the dairy program. Training courses for agricultural students in the schools can create a general awareness by new workers about dairy production. Those who are appointed as dairy extension workers

Veterinary services are sorely lacking for the farmers. One expatriate veterinarian at Bambui Station is available to help farmers as time permits and one veterinary technician from MINEL is available also as time permits, but he does not have a reliable means of transportation.

The Ministry of Livestock should be encouraged to make at least one veterinarian available to the dairy farmers at all times. Efforts need to be made to educate veterinarians in the practice of working with dairy cows.

Extension workers and veterinarians need to be supplied with a means of transportation.

The last major constraint concerns milk collecting, processing, and marketing. At this point, milk collecting and marketing do not pose any significant problems, but milk processing does. The technology of the cooling, pasteurizing, and packaging equipment is such that repairs to the system when it malfunctions are not possible without trained technicians. It is necessary for IRZ to have a technician capable of making all repairs to the milk handling equipment.

Although there have been no advertising or consumer education, the demand for milk in the Bamenda area is increasing. The market should absorb expected production increases in the near future. Butter, cheese, ice cream, and yogurt have been made in the IRZ laboratory. These products can potentially make up a large share of the market.

When the farmer milk production reaches a high enough level a small appropriate technology dairy processing plant operated by the cooperative may be feasible.

capability can be minimal. Most of the basic facts necessary for the development of a dairy industry have been researched elsewhere. The research staff of IRZ has been expanding and they will be developing their abilities as they go along.

The ultimate status of the dairy industry in the Northwest Province should be a network of several hundred dairy farmers with an average of 5 to 10 cows each, with farmers earning approximately 100,000 francs per cow per year. Four hundred farmers producing 15,000 liters per year will yield 6 million liters per year.

The roads in the Northwest will be hard surfaced in a few years making transportation easy. Three to four milk collection centers in the province should be adequate. Milk could be processed in Bamenda before being sold both locally and in Yaounde and Douala.

The major inputs for the proposed expansion of the dairy industry include:

HPI/AID:

- -HPI personnel and support (1 or 2 advisors for the foreseeable future--at least 5 to 10 years)
- -one shipment of 80 to 100 animals in 1984
- -training (in country and abroad)

IRZ/MINEL:

- -personnel (research, extension, veterinarians, technical)
- -facilities and equipment for milk collection, processing and marketing
- -supplies and equipment for crossbreeding
- -vehicles
- -training (in-country and abroad)

be capable of financing the majority of the costs of this project. IRZ has shown a lot of interest in developing the dairy industry while MINEL has not. MINEL will have to develop an interest and become actively involved for it to work.

In summary, the dairy industry in the Northwest should expand gradually as more and more farmers become interested and as more cows are available.

The industry should develop with a strong foundation as it grows from the bottom up. The extension, veterinary, and milk processing services and increasing cattle numbers are necessary even now, but they should not expand faster than the farmers expand and have need for them. We are involved in a process that will take decades before we begin to see ultimate goals reached. Slow, steady, progress from the grass roots up will lead to a lasting, viable dairy industry.

Paix — Travail — Patrie

Peace — Work — Fatherland

DELEGATION GENERAL A LA RECHERCHE SCIENTIFIQUE ET TECHNIQUE

GENERAL DELEGATION FOR SCIENTIFIC AND TECHNICAL RESEARCH

INSTITUT DE RECHERCHES ZOOTECHNIQUES,

I. R. Z.

INSTITUTE OF ANIMAL RESEARCH

B. P. 1457 - YAOUNDE

Yaoundé, le / the 29 JUIL. 1983

N° 0815 /L/DIRZ

LE DIRECTEUR

OBJET : URGENT

à M. / to Mr W. F. LITWILLER,
Ag. & RURAL DEVELOPMENT OFFICER
U.S.A.I.D., Yaoundé
B.P. 817.

REF :

Dear Mr. Litwiller,

Thank you for your letter of July 27, 1983.

I will try to see you at about 5 p.m. today 28 July 1983. I have commitments until about 5 p.m.

I enclose here copy of my comments on the HPI draft report. I shall meet you and Mr. Phelps for discussions on this on Monday 1st August 1983.

Le Directeur

Dr. Emmanuel O. Ekong

HPI/IRZ EVALUATION REPORT : COMMENTS

1) LIVESTOCK DISTRIBUTION : Why distribution behind targets : (P.3) :

Reasons : I do not totally agree with all the reasons because :

(1) It was necessary and desirable to confirm the adaptability of animals on Station before passing them out to farms. This took time.

(2) The Stations had to select the best animals for its own (Herd/flock) improvement programmes.

(3) There were other set backs that were not forseen e.g. abortions in the 1974 day cattle shipment, restrictions due to Disease outbreak.

(4) A way had to be found to enable small farmers purchase stock.

2) MILK DISTRIBUTION :

- Long breakdown of the Bambui Milk Plant was due to delays in the delivery of orders for spare parts from Britain (Europe).
- For a long time Wakwa Centre ran fresh milk sales to Ngaoundere - Revenue records available.

3) RECOMMENDATION : (5) HPI/IRZ could only undertake limited (Pre-Extension) extension work. The responsibility is with MINEPIA.

4) MANAGEMENT AND RESEARCH CAPABILITIES : The Institute is young but was doing its best to improve on these through recruitments and training. Young researchers were being evaluated on the job for selection of the best for training. Both qualities came with training and experience.

It is also to be observed that HPI advisors do not appear keen in training technicians on the job.

5) FACILITIES (FEEDING ETC.) BAMBUI AND WAKWA : Granting that the I.R.Z. researchers were young and largely untrained, HPI advisors did not put up any pro~~ject~~posals to improve the situation which were rejected by I.R.Z.

6) ANIMAL DISTRIBUTION : I.R.Z., DIRZ may not accept recommendation A3a. for technical reasons.

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7) TRAINING FOR UNIT MANAGEMENT RESPONSIBILITIES (FROM MANAGERS) :

2 candidates have completed 5 months training in U.S. and hope to earn their B.S. Degrees, who provides the scholarship for the B.Sc. Degrees? Will HPI/USAID help?

8) MILK MARKETING : The Bambui Plant is now functioning and milk spoilage prevented. Milk marketing is now through ~~thick~~ retailers.

9) POULTRY SECTION :

(1) HPI should let us know the sources of Poultry breeds (whether pure breeds or cross lines). The same is desirable for HPI donated livestock.

(2) Egg colour and preference : The local birds lay white eggs. The auestion of egg colour is largely recent sentimental because Cameroonians are used to white eggs. What is needed at present in Cameroon is increase in the supply of good quality eggs, no matter the colour. The white leghorn which has performed so well should be exploited and recommended to both small and large poultry farmers.

(3) Usefulness of dual purpose breeds in Cameroon. We doubt the opinion of the evaluator in the context of peasant farmers in Cameroon and their past experiences with such breeds.

(4) Tenure of Researchers at Mankon : This is due to circumstances beyond our control and the need to train new recruits in poultry husbandry.

10) EXTENSION TRAINING IN POULTRY MANAGEMENT :- To be limited to training MINEPIA Extension workers. IRZ/HPI to be limited to extension chick distribution. We agree.

NOTE : The Evaluators report seemed to have concentrated on Commercial Poultry production rather than on the smaller resource farmer; the main attention of the IRZ/HPI/USAID Project.

11) COSTS AND RETURNS SECTION : "The long term outlook for a viable dairy industry in the Bamenda area is nil"?
The dumping practice of IRZ in selling poultry, eggs and rabbits below market prices is the official policy of help small producers obtain breeding/rearing material at low prices. They have little effect on the open market.

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12) FINANCIAL ADMINISTRATION

The evaluation evaded the question of the financial administration of the project which IRZ has never been kept informed. We would request an evaluation of this.

13) COUNTERPART TO HPI PERSONNEL

Apparently HPI personnel have not sucessfully groomed any of the counterparts assigned to their programmes to the extent that they can conviniently handle their activities after their departure. The evaluation commission failed to look into this.

14) CONSTRUCTION:

The construction of the hatchery which was expected to be put up in the third year has not been accomplished. This should be looked into.

15) SHORT-TERM TRAINING IN THE U.S.A.

This has not been fully realised. Twenty-five scholarships were previewed and only Eleven places have been filled.