CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

931-0050 (P)

Report Symbol U-447

1. PROJECT TITLE

931005004502 + 1701

Increasing Livestock Production through Improved Nutrition Information

2. PROJECT NUMBER: 931-0050

3. MISSION/AID/W OFFICE: DS/AGR/L

PD-AAL-557 A1

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) 33p

☐ REGULAR EVALUATION ☒ Special Team Evalu.

5. KEY PROJECT IMPLEMENTATION DATES

A. First PRO-AG or Equivalent FY 77

B. Final Obligation Expected FY 78

C. Final Input Delivery FY 81

6. ESTIMATED PROJECT FUNDING

A. Total $ 390,000

B. U.S. $ 390,000

7. PERIOD COVERED BY EVALUATION

From (month/yr.) Nov. 1977

To (month/yr.) July 1979

Date of Evaluation Review July 25-27 1979

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
Progress to ward the establishment of a worldwide network of feed information centers has been significant but an extension of project is needed to ensure continuity and further development and refinement of information system now underway. These needs, supported by the team evaluation, should be accomplished through the preparation of a PID and project paper for the continuation and for revision of the present project. If developed, the PID and PP should address the issue of data utilization in general with particular attention to Africa.	J.W. Oxley Project Manager	January, 1980
2. Project manager should conduct an on-site review of two of the information centers during last year of project.	J.W. Oxley Project Manager	Sept., 1980
3. During the last year of this project, the contractor should assist with increasing the utilization of the information generated by the project to the LDC's.	L.E. Harris Utah State	Nov., 1980
4. Attention should be focused on the quality of the data going into the data bank. Also new feed composition data on more feedstuffs will be needed from more of the LDC's.	L.E. Harris Utah State	Nov., 1980
5. An annual or terminal report (if project is not extended), covering the period July, 1979 to November 1980 will be submitted to AID by the contractor.	L.E. Harris Utah State	Dec., 1980

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

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

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

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

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

Dr. James W. Oxley, DS/AGR/L, Proj. Manager — JWO

Mary Mozynski, DS/AGR Program Officer — MEM

John R. Wilson, Deputy Director, DS/AGR

12. Mission/AID/W Office Director Approval

Signature

Typed Name: Tony Babb

Date

AID 1330-15 (3-78)

PROJECT EVALUATION SUMMARY (PES) - PART II

#13 - Summary

The project continued to generate information needed to facilitate the development of more efficient livestock feeding systems in the LDC's. The collection of these data has required the sponsorship and administration of training courses, seminars, workshops, reports at scientific meetings, graduate student programs, technical and non-technical bulletins and the contribution of information to NRC publications. These activities occurred on the Utah State University (USU) campus and in cooperating countries such as Costa Rica, Philippines, Syria, Indonesia, Germany and Australia. Collection centers are being developed in these countries staffed with technicians, many of whom have been trained by the program.

The scope of work schedules for the review period were satisfactorily completed and projections for the final year of this contract period call for the continued expansion of the data bank materials and the initiation of their utilization. At the termination of the present contract, emphasis should be shifted to the latter activity and also a strengthening of the administrative component to better serve expanded programs. A deficiency of dedicated administrative power for an enlarged international network of feed composition centers is a possible future restraint.

#14 - Evaluation Methodology

An annual evaluation was a scheduled item of the project proposal and scope of work document. Purposes were to review accomplishments during the previous year (since June 1978) and the accomplishments recorded since the last in-depth review of November 1977. Other objectives were to evaluate the work proposals for the next and final year of this contract (November 1979 to November 1980), examine the expenditures and projected budget and to determine the future direction of the program for new project considerations.

The evaluation was based on the facts presented by the members of the contractors team to an external review team composed of three recognized livestock production specialists. The AID project manager and two independent observers (animal nutrition specialists) were also present at all review sessions. Questions on information and facts presented received efficient responses from contract representatives. Review team members, the project manager and observers offered verbal impressions of the project status in the final review session. A list of the major participants in the review and a written report by the review team are attached to this PES statement.

#15 - External Factors

The FAO sponsored an initial introductory symposium on the proposal of a worldwide feed composition data bank and the USU has attempted to develop the program. The project definitely needs an established secretariat to provide leadership and coordination such as the FAO. However, the FAO does not indicate that it wishes to actively be involved with the project now. The USU has had to be directly involved with administrative duties of the INFIC instead of providing only technican assistance to the centers, as charged. Therefore, plans for a permanent international secretariat for INFIC need finalizing and AID should contribute to the support of the program both financially and with it's establishment for servicing all worldwide, free countries. AID should not sponsor the INFIC activities alone but be one of the contributors in a group of developed nations, similar to other FAO worldwide programs. USU proposals for INFIC have confused and confounded administrative actions credited to IFI.

#16 - Inputs

The scope of work statement indicates that IFI will support INFIC and the regional centers which was illustrated by budget and progess statements. IFI is contributing a high percentage of their overall budget and time in support of the INFIC program. Other cooperating countries should feel obligated to support the INFIC program with similar contributions.

The graduate student program geared toward improving the collection and utilization of feedstuffs composition information, needs to be strengthened. From four to six graduate students from LDC's should be totally sponsored by this project, on a continuing basis. Crediting the program with students funded by their own countries or families is of questionable value.

#17 - Outputs

The outputs of the project activites have been very satisfactory "more emphasis needs to be placed on increasing the quantity and improving the quality of information in the data bank." Valuable and attractive feed composition tables, instructional bulletins, feedstuffs vocabularies and promotional pamphlets have been published. Workshops, seminars and informal presentations have been conducted on foreign sites with mixed results. Efforts at orientation and stimulation of interest in the INFIC and IFC objectives are commendable. The relationship of objectives to accomplishments is illustrated

OBJECTIVE	PROGRESS AND SYSTEMS
Promote feedstuffs identification	Excellent-Reports and meetings
Expansion of data bank	Excellent-Publication and contracts
Establishment of INFIC Units	Spotty-Workshops and grad programs
Data Utilization in LDC's	Poor-trained tech. & grad students

#18 - Purpose

The project purpose is to promote the efficient utilization of feedstuffs or feeding systems for various classes of animal species in LDC's through the use of information collected and disseminated by trained technicians. Technicians are trained, information collected, and generated and the final stage of the project-utilization of collected information is planned. Under the present constraints of a lack of trained technicians, insufficient budgets and a permanent secretariat of INFIC, many of the LDC's are not yet exposed to the potential benefits of this important project.

#19 - Goals/Subgoals

The major goal is to increase the production of high quality animal products by more efficient nutritional programs to improve the health, economical and sociological level of LDC populations. Computerized information on the composition of forage plants, other roughages and feeds available for livestock nutrition is being generated for this goal. The regional and country feed information centers must continue to collect new analytical data to supplement the data bank and put more emphasis on assisting LDC's in the utilization of compiled information. The contractors have established several feed information centers that need strengthening.

#20 - Beneficiaries

Major beneficiaries have been the scientists, technicians, educators and contracting institutions interested in generating information on livestock feedstuffs throughout the free world. Livestock producers in developed countries have benefitted more from the information than those of LDC's due to their knowledge of advance procedures and techniques. This trend may continue but there will be more emphasis on the utilization of feed resources data to the benefit of LDC farmers. "Trained people in many LDC's of the world are becoming familiar with the tables on feed composition, proceedings of symposiac and workshops, and publications by IFI, INFIC and the National Research Council." Thus, the benefits from this project should be more evident in the LDC's in the future.

AID administrators may utilize outputs in planning new livestock production projects in LDCs, determining a solution to nutrition related problems and distributing feedstuffs information to AID missions. Collaboration should develop between presently related programs, such as the small ruminant CRSP project, by supplying feeding information for appropriate team members. This will accelerate progress of other livestock projects which could be dependent on this kind of information.

#21 - Unplanned Effects

Progress of the project has resulted in the surfacing of a deficiency of trained field technicians in the LDC's to generate and then utilize the end product. Training programs, particularly graduate student programs, will be emphsized through the remainder of the project.

Accelerated activities and progress have increased the burden of administrative duties needed for a worldwide coordinated program. The inability to get a strong central secretariat established for coordinating a worldwide program has been a disappointment. Certain regional centers function well while others have uncertain futures and are operating on weak foundations. There are still some "missing links" in the worldwide coverage scheme.

#22 - Lessons Learned

The "Training of graduate students, scientists and technicians through studies, research, workshops, meetings and publications contribute significantly to future development of improving and expanding of feed data collection and utilization." Many of the procedures developed within this project can be used as models for similar programs which catalog other types of data. Once a common vocabulary was established, the procedure for accumulating data on feed composition in different countries was easily repeated.

The application of the information for improving livestock production in any country is finally dependent upon the LDC itself. Success requires the interest and enthusiasm of LDC technicians, administrators and cooperators in meeting the overall goals of the project.

#23 - Special Remarks

The project review committee recommends that the project be continuted after next year's contract termination, for 3 to 5 years and that graduate student programs be expanded now. The graduate students should have an interest in the IFI objectives and come from the Middle East, Southeast Asia and Latin America areas. The host countries must

comprehend the potential benefits from participation in this project so that they provide dedicated manpower, sufficient materials and continuous financial support at the national level. It is the imperative duty of the contractor to encourage and implement the utilization of accumulated data by and in the LDC's.

ATTACHMENTS:	NUMBER OF PAGES
Review Report Covering Letters (Sept. 5)	1
Review Organization - Personnel	1
Review Team Combined Remarks	15
Report of Dr. J. P. Fontenot	7
Report of Dr. D. H. Gates	3

September 5, 1979

Dr. James W. Oxley, Chief
Livestock Division
AID/DS/AGR/L
408 Rosslyn Plaza
State Department
Washington, D.C. 20523

Dear Dr. Oxley:

Enclosed is our review report on AID Project No. 931-11-130-050-73, Contract No. AID/TA-C-1159, "Increasing Livestock Production through Improved Nutrition Information", Utah State University.

Admittedly, there was difficulty in relating the LDC situation in Africa to the project since Utah State University has agreed to have work done in much of Africa through INFIC centers in West Germany, France and ILCA. Except the ACSAD center which works with some of the Arab countries in northern Africa, the other African countries are being serviced through the International Livestock Center for Africa (ILCA). The Institut d'Elevage et de Medicine Veterinaire des Pays Tropicaux (France) and Tropical Products Institute and Universitat Hohenheim Dokumentationsstelle. The status of the collection and utilization of data with recommendations on feeding systems at these three INFIC centers was not a part of our review. Much of the feed data collected in Africa has been translated into the databank, but outputs are unknown to the review team. Perhaps AID should explore this situation. There was overall agreement that satisfactory progress had been made on the project. There was agreement on the work plan for FY 80 which is appended.

Because of the African situation, you will note that much of the review team report represents the analysis of the project by Dr. Fontenot and me. I wish we could have had greater unanimity. I considered it very important to append the full reports of Dr. Fontenot and Dr. Gates to this report.

The IFI has an Advisory Committee. It is suggested that more use be made of this Committee, including annual reporting, distribution of minutes of meetings, long-term support and potentials for quality and quantity of inputs and outputs.

Please let me know if I can be of further assistance.

Very truly yours,

J. L. Krider

J. L. Krider, Review Team Leader
Purdue University
1305 Ravinia Rd.
West Lafayette

cc: Dr. J. P. Fontenot
Dr. Dillard H. Gates
Dr. Lorin E. Harris

September 4, 1979

To: Dr. James W. Oxley, Chief, Livestock Division
AID/DS/AGR/L
408 Rosslyn Plaza
State Department
Washington, D.C. 20523

From: Dr. J. L. Krider, Review Team Leader
Purdue University
1305 Ravinia Rd.
West Lafayette, IN 47906

J. L. Krider

Project Review Team:
Dr. J. P. Fontenot, Professor of Animal Science
Virginia Polytechnic Institute and State Univ.
Blacksburg, VA 24061

Dr. Dillard H. Gates, Range Management Advisor
and coordinator of agricultural research for the African Bureau
USAID, AFR/DR/ARD
State Department
Washington, D.C. 20523

Dr. J. L. Krider, Purdue University
1305 Ravinia Rd.
West Lafayette, IN 47906

Observers:
Dr. Paul Moe, USDA/SEA nutritionist and liason officer for the USDA funded project with Utah State entitled "Research to Develop, Compile and Document Feed Data for the United States".

Dr. Charles E. Haines, Nutritionist and consultant to AID
AID/DS/AGR/L
408 Rosslyn Plaza
State Department
Washington, D.C. 20523

Purpose: Review of AID Project No. 931-11-130-050-73
Contract No. AID/TA-C-1159
Title: Increasing Livestock Production through Improved Nutrition Information
Utah State University, Logan, UT 84322

Dates: July 25-27, 1979

EVALUATION SUMMARY. Excellent progress was made during FY 78 and FY 79 toward the goals of the project. The international feed vocabulary was improved and simplified. Feed names were edited and corrections made in scientific and common names. The international feed names and recording system are being widely accepted. Over 1,300 feed names with composition data have been added from the Middle East and Southeast Asia bringing the total databank to 13,480 feed entries versus 8,093 in 1977.

INFIC centers have been established in Syria serving 21 Arab countries and in Costa Rica serving 21 Latin American countries. Plans have been developed for holding a workshop in Southeast Asia for establishment of an INFIC center. A constitution and by-laws have been prepared for INFIC for adoption by INFIC. A secretariat is under consideration to further solidify INFIC.

About 1,100 key people attended workshops, symposiums, training sessions and meetings. Twenty-three articles were published concerning IFI activities related to international workshops, scientific journals, World Animal Review (FAO), symposium proceedings and bulletins. Twelve additional papers dealing with INFIC aims and goals were presented in four countries. Over 1,000 copies of the 825 page International Symposium on Feed Composition, Animal Nutrient Requirements and Computerization of Diets have been sold for use throughout the world. Middle East tables of feed composition were distributed and a revised edition in Arabic and English has been prepared for publication and distribution within a few months. A position paper for IFI has been published. An INFIC Publication (1978), a position paper, was published. Two other INFIC papers have been prepared.

Graduate student training was continued with three students supported partially on the project. A fourth student from Costa Rica has been accepted. Four additional graduate students are involved in closely related research and training.

The plan of work for the period of July, 1979 through November, 1980 was thoroughly discussed and agreed upon by the review team and the IFI staff. It is appended. Future needs were carefully considered and recommendations developed for FY 80 and beyond.

The Utah State staff works as a team being properly organized to move toward the accomplishment of the objectives. There are four and two-thirds staff and two secretaries in addition to graduate students and one person part-time at the computer center on the project. The staff is dedicated and unique in having a solid base of experience, expertise and support facilities to execute this project. The dedication of the staff to this important international effort was apparent.

The following evaluation and recommendations relate to the specific directives to the review team from the Agency for International Development.

1. Should the project be terminated in 1980, extended or modified?

This project should be extended with funding by AID for three or preferably five years (FY 81-85) to complete work on the original objectives and to increase training through graduate students, workshop programs and model feeding systems for use in LDC's. This should be done with emphasis on programs for the less developed countries and also provide technical assistance to countries which will be participating in the Regional Feed Information Centers in the Interna-

tional Network Feed Information Centers (INFIC). One team member places highest priority on utilization of information for use in the LDC's.

The extension of the project with some revision and redirection is needed to accomplish the following high priority goals.

A. Technical assistance will be required from the Utah State staff to work with feed information centers, establish and solidify the centers, conduct workshops and training sessions, collect and publish new feed information data from the LDC's and developing areas, etc.

The leadership of staff at Utah State University is the catalyst. The future Utah State support will be about $250,000 annually. It is suggested that AID support should exceed this amount somewhat. USDA support appears to be about $30,000 annually without additional support in sight. Therefore, leadership support must come from AID through Utah State University. The latter recognizes that Dr. Harris will give leadership for 3 to 5 years unless USDA can take on the leadership role with major budget commitments. If this occurs, Dr. Harris and associates could collaborate closely with USDA leadership. When Professor Kearl (Co-leader) retires in 1980 or soon thereafter, a new staff member having adequate experience and a keen interest in this important area of national and international work should be employed. He should have 15 to 20 professional years remaining before retirement in order to give long-term leadership after Dr. Harris and Professor Kearl retire. During the recommended period of project extension with modifications, these leadership roles should be resolved with AID support and collaboration.

B. New feed composition data will be needed on more feedstuffs in the LDC's and elsewhere because of the differences in composition of plants and feedstuffs and feeding values. Composition of forages varies greatly from season to season in the LDC's. Changes in processing, milling, etc., result in feedstuffs of different composition and feeding value. Filling the missing gaps in the feed composition data of the more important feedstuffs will be essential. Locally available feedstuffs in LDC's with their composition would provide a basis for feeding recommendations to improve animal output. Emphasis must be placed on the quality of data input into the feed databank with new data as well as the data from LDC's. Updating the composition data in the databank with proper (simplified) nomenclature for identification of each feedstuff will improve user acceptance. Quality of data will be increased greatly as cooperators from the centers provide more feed composition data from the LDC's as these centers become operational after 1980.

C. The INFIC secretariat should be established. This should be partially funded by AID to get supporting funds from other countries such as Canada, United Kingdom, W. Germany, France, Australia, etc. Long-term leadership support and coordination will be provided if the secretariat becomes properly established and adequately funded.

D. Training through graduate student and workshop programs needs to be expanded to improve the collection and use of feed information to improve the application in improving animal production in the LDC's to serve man. The extension of this project should include four to six graduate students from the LDC's with most of these funded under this project. Utah State has been accepting students adequately funded by their own countries or families and will continue to do this. Funds should be provided to support up to four to six graduate students per year from LDC's.

E. Model feeding systems need to be developed utilizing data from the LDC's. These high priority areas are extremely important to the attainment of future goals of this project for improving nutrition information to increase livestock production for smallholder farmers in LDC's. It must be recognized that major improvements in the utilization of the feed databank information on composition of feeds and their use in improving animal feeding practices in the LDC's and the developing countries must be a long-term effort. Livestock and poultry producers in many regions of the world including the LDC's will benefit from the many accomplishments, contributions, publications and technical support base of this project extension with modifications. These recommendations place emphasis upon the most critical high priority needs of the future with full recognition that the leadership at Utah State can do it with AID support and with the manpower limitations described to the review team. These Utah staff resources should be directed toward the primary goals (targets) and should not be diluted by taking on other important projects and assignments. Utah State University has already taxed its resources to the limit to support this project and has indicated willingness to continue this level of support through 1985, providing AID support will be forthcoming. The review team found no other evidence of firm long-term (5 year) commitments for extension of this project with modifications to emphasize the critical primary areas of need mentioned in the preceding paragraphs.

An alternative suggested by a member of the team for extension of this project would be to place primary emphasis on the utilization of information from the databank in the solution of livestock feeding problems in LDC's. Secondary emphasis would be to accumulate and update feed composition information in the databank. This alternative would require greatly increased funds and substantially more personnel than the suggested extension plan outlined in the preceding paragraphs.

2. Evaluation of accomplishments FY 78-79 since last reviews.

Data have been obtained from Southeast Asia and progress is being made on recording these in the databank. Over 1,300 feedstuffs have been recorded from the new INFIC center in Syria serving 21 Arab countries. A feed composition book will soon be published in Arabic and English. Data have also been obtained from Turkey and Iran. Arrangements have been made for receipt of data on 4,000 feeds from the INFIC center in West Germany. These data are mostly from LDC African countries. West Germany has responsibility for data from the International Livestock Center for Africa (ILCA) in Ethiopia and non-French speaking countries in central and southern Africa while the French center continues to obtain data from French speaking countries in Africa. It is suggested that the West German and French centers report through INFIC on publications (outputs) for utilization of data and on feeding programs to improve animal production in the LDC's.

Following the workshop and the establishment of the Latin American Center in Costa Rica, data continues to be collected. Contacts have been made in Southeast Asia where a workshop is planned with cooperators who will recommend a location for the Southeast Asia center(s). Some feed data have been obtained from the Philippines and Malaysia.

Some delays have occurred in checking and accurately recording data in the databank. The lag period has now been shortened between receiving data and recording it in the data bank.

In summary, major accomplishments since the last review have been 1) con-

tinued inputs into the feed databank; 2) conducted workshops, seminars and meetings involving 1,100 people; 3) continued training of graduate students and INFIC cooperators; 4) prepared project related materials for publication and distribution; 5) continued efforts to help solidify INFIC and 6) established centers in Costa Rica for Latin America and Syria for 21 Arab countries.

The databank has provided much useful data to be used in feed composition tables used in National Research Council publications which are used nationally and internationally including LDC's in formulating animal diets. Updating and improving quality of data, including the filling of gaps, continues to be emphasized. Both quantity and quality of data obtained for the databank have received attention.

3. Evaluation of Work Plan and Budget FY 79 and FY 80.

The budget for this period was considered adequate to accomplish the work plan to November, 1980. The plan of work from July, 1979 to November, 1980 was carefully evaluated and agreed upon by the review team and the project leaders. The work plan is attached. It should move the project toward the objectives stated in the original project.

Efforts to obtain funds for a secretariat of INFIC with the secretariat located in Europe near one of the centers such as FAO, Rome, is suggested. A workshop will be held in Southeast Asia leading to the establishment of an INFIC center(s). Other efforts should be geared to giving technical assistance to newly established centers in Syria and Costa Rica.

Maximum effort should be placed upon preparation of publications. INFIC publications 2 and 3 and the Mideast tables of feed composition should be completed promptly.

Plans need to be developed for a second International Symposium to be held in Africa and sponsored by ILCA with emphasis on needs of LDC's.

Consideration of a no-cost extension of the FY 80 budget should be given so funds could be kept to complete the training of graduate students in the program.

4. Future Needs for Implementation of Livestock Feeding Systems in the LDC's and Updating of Feed Information.

Increased effort will be required to update feed composition data with emphasis on quantity and quality of data. Values entered in the databank must be scrutinized and monitored constantly for possible errors. Expertise of the Utah State staff can best be utilized in refining and expanding information inputs in the databank and the publication of tables of feed composition outputs for new centers in the Mideast, Southeast Asia and Latin America as well as for established centers.

The development of selected Model feeding systems for use in LDC's is encouraged for the Mideast, Southeast Asia and Latin America. The implementation of livestock feeding systems in the LDC's would go far beyond the time, funds and personnel allocated to this project through FY 80. Tables of feed composition are resource material for those involved in developing practical feeding recommendations and livestock feeding systems. IFI (Utah) efforts in this area for LDC's must be limited.

5. Needs for Future AID-USDA Technical Involvement and Support of the International Feed Information Centers Beyond 1980.

It is imperative that AID, USDA and Utah State provide support on a cooperative basis for this important project during the recommended extension period. Utah State (IFI) inputs will likely be maintained at about $250,000 annually. AID support needs to be increased to meet future needs in the five (5) high priority areas discussed on pages 2 and 3 plus inflationary costs. USDA should be encouraged to get permanent funding and leadership support. The year end support which has been received from USDA is critically needed, but remains far short of resources required to move the project forward beyond FY 80. The Advisory Committee of IFI should be urged to support permanent funding by the U.S. Congress for this very important international project. It should continue to be a cooperative project with AID, USDA and Utah State funding.

Some increase in staff will be required beyond FY 80 even for limited implementation of livestock feeding systems in LDC's after the collection of feed composition data on locally available feedstuffs. Target LDC groups in the Arab countries should be reached through ACSAD, Southeast Asia through the newly planned center, and Latin America through IICA in Costa Rica. Key workshops involving recipient countries will be critical in the development of future feeding systems utilizing feed databank information on local feedstuffs to benefit smallholder livestock farmers in LDC's. Technical assistance and leadership from the United States will be required beyond FY 80. These inputs must come from IFI (Utah State) with major financial support from AID and limited financial support from USDA based upon all evidence submitted.

6. Suggestions to AID for Utilizing Project Outputs for Benefits of LDC's.

Feed composition data will be of value only when utilized in improving efficiency of livestock production. The establishment of Model feeding systems for use in the Mideast, Latin America and Southeast Asia centers with major inputs by trained personnel in these areas will help to show how to do it with IFI technical assistance. From this beginning, other feeding systems for smallholder livestock producers can be developed by local expertise.

AID may utilize outputs of the project by: 1) distributing project publications and feed information to AID missions; 2) utilizing project data in ongoing or in planning new livestock production projects in LDC's; 3) developing new livestock production projects based upon utilization of databank information in the solution of nutrition related livestock production problems; and 4) coordinating project outputs and publications with Title XII projects such as the one with small ruminants. The project leaders on the latter could provide inputs into the feed databank and also utilize some output data. The Florida project on minerals should also provide input-output data. AID's role is critical in coordinating, advising and distribution of project publications.

Utilization of feed composition data by including them in feeding systems for use in the LDC's would be a logical follow-up to the current effort. Perhaps AID should undertake a project to develop livestock feeding systems for the LDC's in the areas where INFIC centers are located. AID could consider commissioning a task force to study the most feasible methods to develop such feeding systems to utilize available local feedstuffs to improve animal production in selected LDC's. In such a project, information would be needed on the composition and estimated feeding value of local feedstuffs. The experiences of the staffs at Utah State (IFI) and other INFIC locations would be invaluable.

Project Evaluation Summary (PES-Part II) Nos. 17, 20, 22 and 23.

17. Outputs. Progress has been substantial. The outputs have been satisfactory when related to the objectives. More emphasis needs to be placed on increasing the quantity and improving the quality of information in the data-bank. Prompt publishing of tables on feed composition, bulletins and other reports is urged. Workshops and graduate training have been important outputs. A balance of actual accomplishments in relation to stated objectives is as follows:

Promote feed vocabulary	Progress excellent nationally and internationally
Enlargement of databank	Much progress made both nationally and internationally.
Establishment of INFIC centers	Latin America and Mideast centers established. Workshop planned for Southeast Asia. INFIC by-laws and secretariat need attention.
Use of data by producers	Little direct evidence presented for this. Development of model feeding systems planned for Mideast.

20. Beneficiaries. The direct beneficiaries are scientists, technicians and educators interested in livestock feed information for improving production in developed and developing countries as well as in LDC's. As models of feeding systems become developed with and by LDC experts for utilizing pertinent feed information for their LDC livestock producers, there will be more emphasis upon utilization of feed resources and data to their benefit. To date the LDC live-stock farmer has been only an indirect beneficiary of this information. A special study would need to be conducted to more accurately evaluate the utili-zation of data by the livestock producers in the LDC's. The results of this project will be used in the LDC's sometime in the future. Trained people in many LDC's of the world are becoming familiar with the tables on feed composition, proceedings of symposia and workshops, and publications by IFI, INFIC and the National Research Council. It will be necessary to rely mainly on national agencies and their personnel to make application of available feed composition data for producers who do not have direct access to this information.

22. Lessons Learned. The principles of accumulating data on feed composi-tion are similar for different areas of the world. The experience learned can serve as a model for other countries to use. The procedures can be used to catalog other useful data. Data collected must be put to use to be of value to producers. The usefulness of feed composition data is being demonstrated in Latin America and can be applied in the Mideast, Southeast Asia, Africa, etc. The application of this technology to the utilization of local feedstuffs in feeding livestock for improvement of production should be relatively high. If an LDC livestock project is to succeed, it requires interest and enthusiasm of the host country technicians, administrators and educators with material and financial inputs to generate feed data composition information and to ensure the use of this information in feeding programs. In this way, improvement in the production of meat, milk, eggs, fibers and work can be achieved.

Training of graduate students, scientists and technicians through studies, research, workshops, meetings and publications will contribute significantly to future development of improving and expanding of feed data collection and utilization.

23. Special Remarks. The project definitely should be funded by AID beyond FY 80 for 3 or preferably 5 years due to the long-term needs and potential benefits. Graduate students from the Middle East, Southeast Asia and Latin America should be included in the program. The graduate students, technicians, professors and professional individuals of the host countries who are responsible for the collection of new feed data information should be the individuals trained to promote the utilization of the completed information in their region or country to improve animal production. There must be manpower, materials and financial inputs at the grass roots level in the host countries for positive identification, project development, implementation and use for success to be achieved!

Attachments.

SUMMARY OF ACCOMPLISHMENTS

November, 1977 - July, 1979

Accomplishments are discussed under four separate categories. These are: The international feed vocabulary and recording system; the International Network of Feed Information Centers (INFIC); symposiums, workshops and other training media; and presentations at scientific meetings and publications.

INTERNATIONAL FEED VOCABULARY AND RECORDING SYSTEM

During the period of this report, new attributes regarding influences on feeds caused by 1) air, soil and water pollution; 2) methods of preservation and storage; and 3) the affects of application of fertilizers and pesticides have been added to the system.

The feed names have been edited and corrections made in scientific and common names, whereby the German and United States name files are virtually in complete agreement.

Feed names have been added from the Middle East and South East Asia. Australian names are being added to the system. The feed names now represent the free world.

THE INTERNATIONAL NETWORK OF FEED INFORMATION CENTERS (INFIC)

INFIC centers have been established in Damascus, Syria and San Jose, Costa Rica. The Damascus center is a part of the League of Arab States, the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD). ACSAD has an ongoing Feed Resources Project. The objectives of this project are: 1) to establish a databank of feed resources in the Arab States, their composition and nutritive value, for the promotion and welfare of animal agriculture in the region, 2) to emphasize nutrition research on natural range plants as they are by far the most important source of nutrients for animals in a region which is dominated by arid and semiarid rangelands and to standardize and unify feed nomenclature, feed nutrient analysis and methods for nutritive evaluation of conventional feedstuffs and of range plants. ACSAD is working in 21 Arab States and has collected data on 1300 feedstuffs used in this region.

The San Jose Center is a part of the Instituto Interamericano de Ciencias Agricolas (IICA). IICA has proposed a project entitled, "Projecto Latinoamericano de Sistemas de Alimentacion Animal Y Composicion de Alimentos". The objectives of the project are: 1) to promote the generation, processing and distribution of specialized material which permits the improvement of the bio-economic efficiency of the feeding systems predominant in Latin America; 2) to provide a new focus for the Latin American investigator dedicated to animal production; and 3) to standardize the criteria to be used in the investigation of the area of animal feeding systems. IICA will work in the 21 Latin American countries.

The Australian Center has a publication almost ready to publish on Australian Feeds. This publication will be used by the livestock and feed industries of Australia.

The present INFIC Centers and their functions are as follows:

Agriculture Canada, Ottawa, Canada is responsible for collecting information in Canada. This information is sent to IFI for summarization.

Australian Feeds Information Center, Sydney, Australia collects information for Australia.

ILCA at Addis Ababa, Ethiopia works with Germany.

Dokumentationsstelle der Universitat Hohenheim, Germany collects information for Europe and the countries in Africa except for the Arab states and French speaking countries.

FAO, Animal Production Service, Rome, Italy acts as a distribution center for INFIC.

Instituto Interamericano de Ciencias Agricolas, San Jose, Costa Rica collects information in the 21 countries of Latin America. IFI aids them in developing techniques. This center also is developing feeding systems for temperate, subtropical, and tropical zones for Latin America for the different domestic animals.

Institut d'Elevage et de Medicine Veterinaire des Pays Tropicaux, Paris, France collects information in the French speaking countries of Africa.

The Arab Centre for the Studies of Arid Zones and Dry Lands, Damascus Syria collects information in the 21 Arab states. IFI helps this center to develop their programs.

Tropical Products Institute, United Kingdom acts as a collection center. This information is sent to Hohenheim Germany for processing.

University of Washington, Seattle, Washington, USA, collects data on fish feeds throughout the world. This information is sent to IFI for summarization.

A constitution and by-laws have been prepared for INFIC. An international entity for INFIC is being established, however, for this to become a reality, a permanent source of funding must be established.

SYMPOSIUMS, WORKSHOPS AND OTHER TRAINING MEDIA

A workshop entitled, "Middle East Feed Composition and Feeding Systems Workshop" was held in Amman, Jordan, November 6-9, 1977. This workshop was held to exchange ideas among scientists and industry on products used for animal feeds, ways to improve the information available, suggestions on ways of using feed data to meet animal nutrient requirements for improved feeding systems and to show how to use feed data, animal nutrient requirements and costs to formulate the most profitable diets. Scientists from five Mid-East countries and the United States presented papers. Support generated at this workshop culminated in ACSAD becoming an INFIC center to collect and document feed information from the 21 Arab states.

Several seminars and private discussions were held in Argentina, Bolivia, Costa Rica, Egypt, Guatemala, Indonesia, Iran, Japan, Jordan, Lebanon, Malaysia, Pakistan, Peru, Philippines, Syria, Turkey, and the United States to instruct personnel on the INFIC system of naming and recording information about feeds.

PRESENTATIONS AT SCIENTIFIC MEETINGS AND PUBLICATIONS

Twelve papers, explaining the objectives, aims and goals of INFIC, the international feed vocabulary and recording systems and related subject have been presented at scientific meetings in Argentina, Costa Rica, Malaysia and the United States.

Twenty-three articles, excluding those for the National Research Council, concerning the International Feedstuffs Institute's activities related to the international aspects of the feed project have been published in workshop proceedings, scientific journals, World Animal Review (FAO), symposium proceedings and bulletins.

Over 1,000 copies of the proceedings of the International Symposium on "Feed Composition, Animal Nutrient Requirements and Computerization of Diets" (825 page, hardbound book containing 105 articles) have been sold and distributed throughout the world.

Copies of the "Middle East Tables of Feed Composition" have been distributed in Mid-East countries. A revised edition of this publication in Arabic and English is in the final stages of review and will be distributed throughout the Middle East and Arab states within a few months.

The International Network of Feed Information Centers Publication 1 (a position paper) has been published.

Two other INFIC volumes are in the final stages of editing; The International Feed Databank System, Volume 1, Part 1, International Vocabulary, and Part 2, How to Fill in Source Forms; and The International Feed Databank System, Volume 2, Part 1, Details of Making Up Feed Names and Part 2, Coding Source Forms.

SUMMARY OF TRIPS MADE, WORKSHOPS AND MEETINGS, IN 1977 TO JULY, 1979

Country	People Attending		Seminars	Workshops	Congress	Meetings
Germany	4	(Scientists)				1
FAO	3	(Scientists)				3
Turkey	17	(Scientists & Government)				5
Syria	9	(Scientists & Government)				3
Guatemala	3	(Scientists)				1
Costa Rica	16	(Scientists)		1		
Jordan	56	(Scientists, Commercial and Students)		1		
Australia	6	(Scientists)				2
Indonesia	75	(Scientists & Students)	1			2
Malaysia						
Soc. of An. Sci.	16	(Scientists & Farmers)				
Seminar	367	(Scientists, Commercial and Students)	1			2
Egypt	15	(Scientists)				1
Philippines						
Bureau of Animal Industry	38	(Government & Commercial)	1	1		
UPLB	7	(Scientists & Laboratory Techs.)		1		
Japan	4	(Scientists & Government)				2
Argentina	410	(Scientists & Businessmen and Farmers)			1	
IV World Congress on An. Production						
Boliva	10	(Scientists)				2
Peru	40	(Scientists & Students)	1			
Costa Rica	4	(Scientists)				1
TOTAL	1100		4	4	1	25

PLAN OF WORK FROM JULY, 1979 TO NOVEMBER, 1980

INFIC FEED COMPOSITION DATABANK

The International Feedstuffs Institute (IFI) of Utah State has the responsibility for technically correlating the work of all the INFIC centers. This consists of updating the name file and assigning all new codes. All feed composition data are sent to IFI where it is checked and dovetailed together by areas. Data from all centers are put on tapes and returned to each INFIC center. Each INFIC center can then retreive information to answer questions from their areas. Eventually it is planned that data will be available for each area of the world. This correlation will continue.

Terminology will be further standardized. INFIC has a detailed feed description which consists of six facets origin (scientific name, generic name, kind or breed and strain), part, process, maturity, cutting and grade. Within each of these facets are detailed descriptions used for the input of feed information.

When the names and data are printed out from the computer, the following may be used: 1) the international feed description including the six facets outlined above; 2) the international English feed name which is similar to the Association of American Feed Control feed names or those used in industry; and 3) common feed names in the countries may be used.

The Canada Feed Act will use the English international feed names in the future. The International Renders Association is going to also use the English international feed names. Malaysia may use the Canada Feed Act as a model for their country.

IFI will develop feed names for Southeast Asia. The work is underway for Malaysia and the Philippines. An INFIC center will be established for Southeast Asia. This will open the way to collect data for feed composition tables for this area.

IFI will aid IICA located in Costa Rica to collect feed composition data in the 21 Latin American countries.

Data are screened before entering into the databank. For efficiency the information is put on a floppy disk. Before entering on the floppy disk, the chemical methods are checked. The dry matter basis of the data must be known, there must be a date when sampled and a country.

Considerable data are collected before entering it into the databank. The mean of the data is calculated plus or minus two coefficiants of variation. The data to be entered are compared to the information in the bank. If the data falls outside of two standard deviations, it is flagged. All flagged data are examined to determine if there are errors, if the feed has been named wrong or if the new data should replace older data.

Before data are released for tables or put "on line for calculating diets", it is printed out by source form number and literature reference number. These data are examined to see that they are correct.

The feed composition tables which are made up for the National Research Council or any other group are examined by a committee of nutritionists knowledgeable about the nutrients in feedstuffs.

The above procedures assure that data going into the bank are of high quality.

Originally all data were put on source forms and entered into the bank by punching cards. However, new source formats have been developed which permit the recording of 40 analyses instead of one on a sheet. Also, in some instances the data are entered directly by coding the source document. This is possible because a terminal with a screen is used. From the terminal the data go on a floppy disk and to the computer. These procedures have greatly increased the quantity of data which can be entered into the bank.

INFIC MEETING

An INFIC meeting will be held in Europe in September, 1979. Topics to be resolved include: 1) approval of a constitution and by-laws regulating the organization and function of INFIC; 2) seeking legal status for INFIC as an international non-profit organization engaged in the collection, documentation and distribution of feed composition information; 3) establishing a secretariat for INFIC at the Commonwealth Agriculture Bureau (CAB), FAO, or some other agency; and 4) other matters of importance to the advancement of INFIC in achieving its goals (exchange of data between centers, terminology, etc.).

To work toward holding the Second Symposium entitled, "Feed Composition: Its Use and Application in Less Developed Countries" will be undertaken. Because of the nature of the work and the implication and impact on animal agriculture, it is suggested that the International Livestock Center for Africa (ILCA) be approached to host this symposium in 1981. The theme of the symposium would be the application of feed information and animal nutrient requirements to the small livestock holders and migrating livestock grazing systems.

GRADUATE STUDENTS

Mr. Scott Bittner will finish his Ph.D. degree in about eight months. He is from the United States. The title of his thesis is "Chemical, Biological and Morphological Evaluation of Semi-Empirical Analytical Methods of Forages". He is attempting to improve the analyses of fiber in animal feeds.

Miss Mercedes M. Garcia is working towards a M.S. degree. She is from Venezuela. Her thesis will be on some phase of new chemical methods for analyzing feeds.

Mrs. Somlak Poungshompoo has been accepted to work toward her Masters degree. She is from Thailand. She expects to start her work in September, 1979.

Mr. Saad Ali Masoud is working toward a Masters degree. He is from Saudi Arabia. His thesis is entitled, "Search for Unknown Nutrient Information on Important U.S. Feeds from Published Literature".

Mr. Mohammad Yakya Saisdy is working toward a Masters degree. He is from Saudi Arabia. His thesis is entitled, "Generating Feed Nutrient Information for Saudi Arabia".

Mr. Muhammad Wardeh is from Syria. He is becoming acquainted with the INFIC procedures for collecting, processing and summarizing feed data. When he finishes he will go back to Syria and work with the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD). His thesis is to develop regression equations to predict biological value of feeds (energy values) from the chemical composition. The databank will be the source of information for this study. Animal feeding trials will be carried out providing time and funds are available. The completion date for his degree is June, 1981.

A graduate student will come from Costa Rica in January, 1980 to work on a Ph.D. degree. While he is at the International Feedstuffs Institute, he will become acquainted with the INFIC procedures for collecting, processing and summarizing data on feeds. When he returns to Costa Rica, he will be in a position to give leadership to the INFIC Center at the Instituto Interamericano de Ciencias Agricolas (IICA). IICA is the agricultural arm of the Organization of American States (OAS).

CANADA

The Agriculture Canada Food Production and Marketing Branch, Plant Products Division (Canada Feed Act) and the Canada Feed Industry Association (Canada Feed Dealers) asked the International Feedstuffs Institute to make up International Feed Names for the Canada Feed Act. These have been devised.

As time goes on, the Canada group will be kept informed regarding any new developments in the area. They will also be helped with definitions of feed terms (general definitions and definitions of part and process terms in the international feed names) when they finalize their Feed Act.

The International Feedstuffs Institute will process feed composition data collected at the INFIC Center in Ottawa.

MIDDLE EAST

The International Feedstuffs Institute has the responsibility to assist ACSAD in the collection, processing and distribution of feed information in the 21 Arab States. To further these objectives visits will be made to the cooperating laboratories in these countries where seminars will be conducted instructing the professional and technical people in the recommended chemical and metabolic procedures to be used and in entering the data on source forms.

The comprehensive Arab and Middle East Tables of Feed Composition will be distributed to all cooperating laboratories and institutions by December, 1979.

Recommended feeding standards will be established for cattle and sheep (goats) for general use in these countries. This publication should be made available by September, 1980.

Data collected and entry into the databank for Middle East feeds will be made on a routine basis.

ACSAD is a permanently funded organization of the League of Arab States and the "Arab League Resources" project is funded for four years. The feed composition work is part of this project and it is anticipated that funding will be continued.

LATIN AMERICA

IICA has accepted the responsibility to host the INFIC Center for work in the 21 Latin American countries. The INFIC Center at IICA will develop feeding systems as well as collect data on the composition of feeds.

IFI will provide technical support to IICA in organizing the Center. An extended trip will be made into Latin America by IFI personnel to hold seminars and workshops at the cooperating laboratories for the purpose of instructing the personnel in the proper use of the INFIC naming and recording system and to suggest recommended procedures for chemical analysis and biological studies. Particular emphasis will be given to the new fiber analyses and digestibility. During these visits, support for the Latin American Feeds and Feeding Systems project will be requested.

Chemical and biological data on feedstuffs will be collected and entered in the Latin America databank.

Progress toward the development of practical feeding systems for cattle should be well advanced at the termination of this contract period (November, 1980).

SOUTHEAST ASIA

A workshop will be held in March, 1980, in Southeast Asia and primarily will be the ASEAN countries. (Malaysia, Indonesia, Philippines, Singapore, Thialand.) Other Southeast Asian countries will be invited. The purpose of the workshop will be to plan where an INFIC Center can be located to serve the Southeast Asian countries. The Australian INFIC Center will be invited to participate in these procedings and to assist with the planning. Australia has agreed to assist with the computer work when a Southeast Asia INFIC Center is established.

Some feed composition data has been collected from Malaysia and the Philipines. Additional data will be obtained from Indonesia and Thialand. This information will be published as a "Southeast Asian Feed Composition Table", provided funds are available.

Personnel in Indonesia, Malaysia, and the Philipines have agreed to use the INFIC system for describing feeds.

UNITED STATES

The International Feedstuffs Institute maintains a databank for United States feeds. Funds for maintaining this bank comes from the U.S. Department of Agriculture and Utah State University.

National Research Council Animal Nutrition Nutrient Requirement Reports and feed composition tables will continue to be made up. Data will continue to be added to the U.S. databank of feed composition. Special emphasis will be devoted to collect data to fill in missing information. Feed samples will be collected and analyzed for missing data.

Definitions of feed terms (general and part and process terms) will be updated in the Association of American Feed Control Handbook to be in line with those of INFIC.

Papers will be presented at the annual meetings of the American Society of Animal Science (1979 and 1980) and other scientific meetings in the United States.

REPORT

EVALUATION OF INTERNATIONAL FEEDSTUFFS INSTITUTE PROJECT "INCREASING LIVESTOCK PRODUCTION THROUGH IMPROVED NUTRITION INFORMATION," SUPPORTED BY AGENCY FOR INTERNATIONAL DEVELOPMENT

Prepared by: J. P. Fontenot

Submitted to: Dr. J. L. Krider, Leader
AID Review Team

This report is based on an "on-site" visit of the International Feedstuffs Institute (IFI) program, oral reports by IFI staff members and review of information supplied by the IFI staff.

The program developed by the Utah State University IFI is recognized nationally and internationally as being unique. The scientists are competent and dedicated to accumulating data on feed composition in the data bank. They have played a leadership role in organizing a network of International Network of Feed Information Centers (INFIC) in different parts of the world. The IFI is recognized as the focal point of the network.

The scientists have served and are serving a very important function for the Less Developed Countries (LDC's). They have been sensitive to the needs and requests of the LDC's. In fact this sensitivity may have resulted in spreading of their resources too thin, resulting in dilution of their efforts of improving and expansion of the data bank. Nevertheless, substantial progress has been made in the development of a quality data bank and a network of feed composition centers.

Evaluation of the International Feed Institute Project

The evaluation and recommendations will be addressed to the specific directives to the Review Team from Agency for International Development (AID).

1. Should the Project be Terminated in 1980, Extended or Modified? The project should be continued with some revision and redirection. Considerable data have been obtained on composition of feeds from different parts of the world. The scientists have been involved in training graduate students from other countries and have participated in some workshops and seminars abroad.

Efforts should be intensified in obtaining complete data on a wide variety of feeds around the world, especially in LDC's. Special effort should be directed toward obtaining data on range plants during different times of the year, covering wet and dry seasons, and on unconventional feeds such as by-products and crop residues. Emphasis should be placed on feedstuffs to be used for swine and poultry, as well as for ruminants. More complete analysis of feeds should be emphasized. Work on analytical checks should be intensified to ensure reliability of data.

Increased effort should be directed to training persons in the LDC's. This should include workshops and training of graduate students. The workshops should be supplemented with publications describing in detail classification, cataloging and analysis of feeds. The workshops should be followed with additional training as needed, and monitoring of progress being made. More emphasis should be placed in training of graduate students from LDC's in order to increase the scientific manpower. This will likely

involve additional recruiting efforts in order to train the top young talent in these countries.

2. Evaluation of Accomplishments Since Last In Depth and Annual Reviews. Data have been obtained on composition of feeds from Southeast Asia and progress is being made toward putting these in the data bank. Arrangements have been made for receiving data on about 4,000 feeds from the German INFIC center. These data are mostly from African countries. INFIC centers have been established in Syria, Costa Rica and Ethiopia and progress is being made in establishing a center(s) in Southeast Asia.

Workshops were held in Jordan and other Mideast countries during which Utah State Scientists explained the data bank system. Following these workshops, The Arab Center for the Study of Arid Zones and Drylands (ACSAD) in Syria became a member of INFIC. Visits and discussions in Southeast Asia increased interest in the data bank, and information was obtained on a number of feeds. Indications are that one or more centers in that region will become members of INFIC. Efforts to train persons connected with INFIC centers in LDC's should be intensified. This could be in the form of workshops and follow-up training.

Progress in adding information to the data bank has been good, but apparently, delays have occurred in getting information in the data bank after it was received. The lag period needs to be shortened.

Scientists at the IFI have been involved in training foreign graduate students in their laboratory. It appears that procedures to be used in their native countries have been emphasized, which is commendable. This activity should receive high priority by the Utah State scientists.

Information from the data bank has been very useful for recently published books and NRC nutrient requirement publications. IFI publication No.1 and the Proceedings of First International Symposium, Feed Composition, Animal Nutrient Requirements and Computerization of Diets have been published. Two publications (IFI Publications No. 2 and 3) have been in preparation for about 2 years. Progress is being made toward publishing these, and hopefully publication will be within 6 months. A publication of tables of composition of Mideast feeds is being prepared and should be published shortly. It is recommended that more intense effort be devoted toward prompt publication of information.

3. Evaluation of Work Plan and Budget for FY 1979 and FY 1980

The plans appear to be appropriate. Efforts to locate funds for a Secretariat of INFIC are very worthwhile. The establishment of such a position will be very useful in coordinating the work of the centers in INFIC. Approval of a constitution and by-laws for INFIC will also be helpful in coordination and operation of INFIC.

The workshop planned for Southeast Asia should be helpful in establishing a center(s) in the area. In addition to planning the location of a center, the workshop should include training of persons from LDC's to obtain reliable feed composition data. The workshop should be followed by contacts to ensure progress and to monitor quality of data collected. The scientists should concentrate efforts on entering the data on hand in the data bank, such as those from Southeast Asia. More detailed plans should be made for collecting additional data and entering these in the data bank, including projected dates that various segments of the

project will be accomplished.

Maximum emphasis should be placed on preparation of publications The IFI Publications No. 2 and 3 and the publication of tables of composition of Mideast feeds should be completed promptly.

The plans for a Second Symposium of Feed Compostion should proceed without delay. It would appear highly desirable for this Symposium to be held in Africa, organized by The International Livestock Centre for Africa (ILCA).

The budget appears reasonable. A no-cost extension should be requested and funds kept to complete training of graduate students in the IFI program.

4. Future Needs for Implementation of Livestock Feeding Systems in LDC's and Updating Feed Information. It is recognized that to realize maximal value for the feed composition information in the data bank feasible livestock feeding systems will have to be developed for LDC's. However, prior to development of such systems, it is imperative that sufficient reliable data are available on composition of feeds in the LDC's. Thus, it is suggested that IFI scientists expend maximum effort in updating feed composition information in the data bank. The values entered in the data bank should be scrutinized and those already in the data bank should be monitored continuously for possible errors.

It is not recommended that the Utah State group devote a large amount of effort in developing feeding systems for LDC's. Their expertise can best be utilized in expanding and refining the information in the data bank. In their contacts with scientists from LDC's through INFIC, perhaps they should encourage the scientists to develop feeding systems which are feasible for

from the data bank.

5. Need for Future United States Technical Involvement and Support of International Feed Information Center Beyond 1980. The information in the Utah State data bank are the most complete in the world. It is imperative that the data bank be continued and updated continuously. This store of information is especially critical for LDC's. It is not appropriate for the state of Utah to support this effort to improve livestock production for the remainder of the world. Thus, U. S. support is needed beyond 1980.

6. Utilization of Project Outputs for Benefits of LDC's. The information on feed composition in the data bank is of no value unless it is used to improve efficiency of animal production, especially by the small producers in LDC's. Utilization of the feed composition data by incorporating them in feeding systems for LDC's would be a logical follow-up to the present effort. Perhaps AID should undertake a project to develop feeding systems for LDC's in the areas where INFIC centers are located. AID should consider commissioning a task force to study the most feasible mechanisms to develop such systems.

Project Evaluation Summary

There will be some unavoidable duplication with the sections above.

Outputs. Thus far, progress has been satisfactory. Maximum emphasis needs to be placed on increasing the information base in the data bank. The quality of the information in the data bank needs to be monitored constantly. Increased effort should be directed toward prompt preparation and publishing of publications.

Beneficiaries. The direct beneficiaries will be the people in various countries, including those in LDC's. Accurate information on feed composition will allow the development of sound feeding programs which will maximize the rate and efficiency of production of animal products. An increased supply of animal products will result in improved nutrition and health of the people.

Lessons Learned. The principles of accumulating data on feed composition are similar for different regions and different countries in a given region. Thus, the experiences learned can serve as a model for obtaining this kind of information for other countries. Futhermore, the procedures can serve as a model for cataloging of other data such as crop yields, fertilization, soil types, climate and other environmental factors.

Special Remarks. The Utah State Program should definately be marked for continued funding. The IFI scientists have unique expertise and interest in accumulating feed composition data. Caution should be used to prevent dilution of the efforts of this competent and devoted group of scientists.

EVALUATION COMMENTS

Increasing Livestock Production Through Improved Nutrition Information

Utah State University Project 931-11-130-050-73
Project Review July 25-27, 1979
Logan, Utah

Report by Dillard H. Gates, AFR/DR/ARD

This report will be addressed primarily to the six topics presented in the project evaluation scope of work and items 17, 20, 22 and 23 of the project evaluation summary (PES), part II.

Scope-of-work, items 1-6

1. The project as designed and implemented, places primary emphasis on collection of feed nutrition data, establishment of an International Network of Feed Information Centers (INFIC), and publication of feed nutrition related publications. The project gives little or no attention to the utilization of information stored in the databank for increasing livestock production in LDC's.

   The contractor has done a reasonably good job of meeting contract objectives. However, since the project does not address problems of livestock nutrition in LDC's, there is a serious question concerning the future of the project.

   It is recommended that the project in its present form not be continued beyond the presently scheduled termination date.

   Nutrition is a serious problem in livestock production in LDC's. If the project is modified to place primary emphasis on the utilization of information from the databank in solution to livestock nutrition problems in LDC's, it could be considered for extension. An extended project would continue to accumulate and update information in the databank, but the emphasis would be on utilization in LDC livestock production projects.

2. Project accomplishments were presented in the summary of accomplishments presented at the review session. The contractor has generally made reasonable progress toward meeting project objectives. However, there is some question about the level of effort, or number of new feed compositions in the databank during the past year. The contractor has placed primary emphasis on accumulating information from Latin America, Asia and the New East. There has been relatively little emphasis given to Africa in either data accumulation or publications.

3. The work plan for the period July, 1979 to November, 1980 is essentially a continuation of past work with emphasis on data collection, workshops and seminars, for the purpose of explaining and trying to establish new centers, publications, and trainings. The work plan places emphasis on Latin America, Asia and the New East. There is no project emphasis on Africa despite the fact USAID has a large number of livestock related projects in Africa and that livestock nutrition problems seriously impair increased livestock production in Africa.

- The implementation of viable feeding systems in LDC's is dependent upon an understanding of the livestock production problems, production and management constraints and of the available feed resources. Livestock production problems in LDC's are varied and complex and range from the small subsistance farmer with one to a few animals to the momadic herder, caring for larger numbers of animals, as an owner or as a "hired" herder. Feed resources vary from rangeland and pasture forages with great seasonal variability to crop aftermath, residues and by-products. Each producer has a unique set of production problems based upon his own mix of resources, management alternatives and socio/cultural situation.

  Livestock feeding systems can be developed only at some generalized level utilizing universal livestock nutrition principles. Specific feeding systems for the individual producer are site specific and must be based upon the application of principles to the specific situation.

  This review leads me to the conclusion that the contractor has an excellent understanding of the science and principles of livestock nutrition, but lacks an appreciation for livestock production and management problems of the small producers in LDC's. The thrust of the contractors discussion was more toward commercial livestock production than sustenance production for family use as is the case in most LDC's which are the concern of AID.

5. USAID should be involved in INFIC only as that involvement contributes to meeting AID's objectives. The accumulation and massaging of nutrition related data may be an interesting academic exercise, but it contributes little to meeting AID's objectives or to increasing livestock production in LDC's unless the data are utilized by livestock producers. There is a logical relationship between the interests of USDA, USU and AID. Each institution can contribute to and make good use of nutrition related information. Each should consider funding and other resource inputs commensurate with their needs and possible utilization of outputs.

6. The contractor can contribute to project output utilization in a number of ways. However, the value of the contribution will be related to contractor's understanding of out-on-the-ground livestock production problems in LDC's. The contractor outputs can contribute to utilization by: 1) distribution of nutrition related publications to AID missions, 2) utilization in planning livestock nutrition inputs into ongoing or proposed livestock production projects, 3) development of new livestock production projects addressing nutrition elements of production, and 4) serve as a general information base source of scientific advice for livestock nutrition related problems in LDC's.

PES items 17, 20, 22 and 23

17. See item 1 scope-of-work comments.

20. The direct beneficiaries of this project are technicians, researchers and educators interested in the field of animal nutrition. The project is not aimed directly at animal nutrition problems in LDC's. If and when information from the databank is adaptable to and made available for solution of livestock nutrition problems of subsistance producers in LDC's, they too could be beneficiaries. The project must address problems of utilization of the data before it can be of significant value to increasing livestock production in LDC's.

22. This project is a reasonably successful effort in the accumulation and manipulation of nutrition related data. A problem seems to be that most of the data remain data and are not made available for solution of problems in LDC's. AID designed or funded projects should assure that pertinent information is fully utilized to solve pertinent problems in LDC's. There should be adequate emphasis on information utilization of information collected by the project. Projects should be carefully evaluated to assess their contribution to problem solving in LDC's.

23. The contractor has done a reasonably good job of meeting the objective of an AID funded project which seemingly was designed for purposes other than solving animal nutrition related problems in LDC's. Contract personnel are enthusiastic about their work and are highly respected scientists. They are capable of providing significant help to AID projects concerned with animal nutrition. However, the efforts of the contractor must be more directly related to solution of problems as they exist out-on-the-ground in LDC's. USAID is primarily concerned with problems of subsistance rather than commercial producers. The project has an inherent weakness in that it does not address problems of information utilization. USAID should contribute to the maintainance of the databank only if information it contains is utilized in solution of livestock nutrition problems in LDC's.