

A. Project Summary

1. Statistical

<u>Project Title:</u>	Feed Information System
<u>New or Extension:</u>	Extension for three years
<u>Contractor:</u>	International Feedstuff Institute Utah State University
<u>Principal Investigators:</u>	Dr. Lorin E. Harris Dr. Paul V. Fannesbeck Dr. Leonard C. Kearl Mr. Karl Fugal Dr. Rex Hurst
<u>Duration:</u>	3 years, November 1977-November 1980
<u>Total Estimated Cost:</u>	\$390,000
<u>Funding by Fiscal Years:</u>	FY 78 - 130,000 FY 79 - 130,000 FY 80 - 130,000
<u>Prior Funding:</u>	\$339,000; current contract to 11/1/77
<u>Project Manager:</u>	Dr. Ned S. Raun, TA/AGR/LV

2. Narrative Summary:

TA/AGR contracted with the University of Florida in 1971 to compile and disseminate information on the nutrient composition of feedstuffs available for livestock feeding in Latin America. This project was successfully completed, with the publication of an atlas in complete and abridged forms.

This project was followed by a contract with Utah State University in 1975 for a worldwide project to provide technical assistance for the establishment of regional feed information centers in less developed countries which would compile and disseminate feed composition information to facilitate the efficient formulation of livestock diets. This technical assistance is provided by the

International Feedstuffs Institute (IFI) at Utah State which is engaged in activities as related to both developing and developed countries. AID provides support for activities as related to developing countries whereas Utah State provides funds for feed information activities in Utah and the United States. These activities are mutually reinforcing. It is expected that USDA will provide future support required for activities as related to the U.S. livestock industry, and Utah State will continue to support state level programs.

Integral to this project was the establishment of an International Network of Feed Information Centers (INFIC) to promote the exchange and dissemination of feed composition information between regions, and to develop standardized procedures for describing feedstuffs and their nutrient composition. Whereas it was originally contemplated that FAO would provide the secretariat for INFIC, this responsibility will be jointly assumed by the regional feed information centers, each of which are or expected to be self sustaining.

This is a proposal to extend the present contract with Utah State University for three years to: (1) provide technical assistance in the establishment of regional feed information centers in LDC's and in the dissemination of relevant information on the nutrient composition of feedstuffs to farmers/livestock producers, and (2) contribute to the consolidation of INFIC as a international network.

B. Project Goal, Purpose, Expected Outputs and Inputs; Assumptions

1. Goal

The goal is to assist the LDCs in increasing the productivity of their present and future livestock populations.

2. The Purpose; End of Project Status; Assumption

a) Purpose

The purpose is to assist in the development of feed information systems in LDC's that will facilitate the formulation of efficient livestock diets and development of practical feeding systems using locally available feed sources.

b) Conditions Expected at the End of the Project:

1. Regional feed information centers in LDCs will have initiated efforts to compile, process and disseminate

2. LDC's will utilize existing capabilities and/or will develop capabilities to continue analysis of feeds and to conduct nutrition experiments for updating animal nutrition information with a minimum of outside support.
3. Information on feed composition together with nutrient requirements will be published to facilitate the formulation of efficient and profitable feeding systems for livestock.

:) Basic Assumptions about Achievement of Purpose

1. The International Network of Feed Information Centers will be firmly established.
2. Country programs and organizations such as FAO, Animal Production and Health Commission for Asia (APHCA), Organization of American States (OAS) and ILCA will participate in assembling basic feed composition information.
3. The contractor, Utah State University, has the competence to collect, code, computerize, and otherwise process and make nutrition information available in published, useful form.
4. LDCs will utilize assistance given and establish priorities and policies conducive to improvement of livestock feeding systems.

3. Outputs and Output Indicators: Assumptions

(a) Outputs

1. IFI will contribute to the consolidation of INFIC as a viable international network.
2. Technical assistance will have been provided to contribute the establishment of regional feed information centers in Latin America, Africa, Asia and elsewhere and in the organization and implementation of feedstuff composition activities in these centers as related to: (1) the establishment of regional committees to work out feeding systems for LDCs; (2) preparation of feed composition tables in various forms (atlas format, abridged tables, magnetic tapes, computer printouts and on-line information where facilities and equipment are available); and (3) advising committees within LDCs on how to utilize information on feed composition and animal nutrient requirements for developing feeding systems utilizing locally available feedstuffs.

3. Livestock nutrition, production and extension specialists from LDC's will receive training on methods of collection, processing and dissemination of feed composition information through seminars, workshops and short course presented in LDC's and at Utah State with technical assistance provided by Utah State staff, and through graduate training at Utah State.
4. Means will be devised to fill gaps in feed composition information, especially on pasture species.

Basic Assumptions about Production of Outputs

It is assumed that the Service of Utah State University will be provided through and with LDCs, INFIC, regional and international agencies; and the contractor will use a coordinated program of utilizing inputs to assure achievement of outputs as recorded above.

4. Inputs; Assumptions

(a) Inputs

- 1) Utah State will provide technical and support staff, computer and support services required to provide technical assistance, training and computer services for the development of regional feed information centers in LDC's
- 2) USAID will provide funds for LDC related activities at IFI, and will monitor project operations and progress.
- 3) Country, regional and international organizations will provide feed composition information.

(b) Basic Assumptions about Management Inputs

- 1) International regional and/or country funding and infrastructure will be available to provide inputs required to establish regional/country feed information centers.
- 2) The United States agricultural sector will provide support for activities as related to the US livestock industry.

C. Significance and Rationale for the Project

The nature and magnitude of livestock industries will generally be largely determined by the quantity and quality of available feed supplies and by how these feed supplies are utilized. In some instances quantity of feed

can be increased, and also nutritional quality through improved pastures, feed processing and other approaches. However in practically every instance, means can be devised to achieve more efficient utilization of available feed resources. On one hand this involves the direct management of these resources, e.g. range management, conservation of feed. The other consideration relates to the formulation of balanced rations based on efficient combinations of locally available feedstuffs, with supplementation as necessary to correct the critical deficiencies of these feedstuffs.

Information on the nutrient composition of available feedstuffs is essential to design efficient rations containing several feedstuffs, and to formulate supplements to correct/complement the inadequacies of grazed forages or other principal ration components, e.g. mineral, protein. However in many instances this information is not available to users, either for failure to disseminate available feed composition data or lack of these data.

The purpose of this project along with the efforts of other regional and international agencies, is to assist LDC's in the development of systems to compile, process and disseminate information to users on the nutrient composition of feedstuffs. This effort will include the establishment of regional feed information centers, and related technical assistance to institutes participating in the regional center activities.

Feed composition information would be compiled in conjunction with on-going feed analysis activities in LDC institutions. It is foreseen that this information can be compiled within existing programs, and will generally not require additional personnel, laboratory facilities or other requirements. Information collected would include analytical data already available plus other data as generated.

As feed composition information becomes available, IFI will prepare publications on feed composition and will aid regional centers in the preparation of publications on animal feeding systems and nutrient requirements. These publications will provide basic information to be used by extension specialists and farmers in the formulation of diets to meet animal needs for reproduction, production of meat, milk, fiber power, and to efficiently utilize available feed resources. It will be necessary for each country/region to develop feed information programs that best meet the needs of their unique conditions.

It is perceived that all sectors of the livestock industry, and all strata of livestock producers will receive significant assistance and benefits from this effort. Benefits derived will largely be related to the degree to which a feeding system can be manipulated or adjusted using locally available feedstuffs/pastures. Examples would be the

formulations of a straw/green forage/supplement diet for milking buffalo and draft oxen on small farms in Pakistan; the use of improved pastures to complement native pastures in Latin America and Africa; the formulation of mineral supplements to correct the mineral deficiencies of consumed forages on whatever size enterprise.

Linkages with National, Regional and International Institutions

This is a general technical service project, designed to provide technical assistance and certain data processing services to national, regional and international agencies engaged in livestock feeding systems programs. Achievement of the project purpose to develop regional feed information systems requires (1) that program is developed with an through LDC and regional institutions and (2) that a worldwide network/system exists to facilitate the efficient compilation, dissemination and exchange of information on nutrient composition and feeding value of livestock feeds.

The International Feedstuffs Institute (IFI), with its technical staff, computer center and supporting facilities, is uniquely qualified to provide this technical guidance and coordination. Technical assistance would be provided to LDC's in the organization and implementation of regional feed information centers. This involves the compilation, storage, retrieval and dissemination of information on nutrient composition of feedstuffs; the establishment of regional committees to direct/coordinate these activities; the training of personnel to manage these programs. Principal attention will be given to the establishment of regional centers in Africa, Middle East, Far East and Latin America.

It is perceived that regional feed information centers would be established as integral components of existing regional programs, and with the technical assistance inputs of various international development agencies/developed countries. In Latin America, the center would be developed under the auspices of OAS/IICA with the integral participation of CATIE and with Utah State IFI providing technical assistance. In Africa, OAU might be the sponsoring agency, with ILCA as a key participant, and with Hohenheim, Germany and IEMVT, France providing technical assistance. In Southeast Asia, the Animal Production and Health Commission for Asia (APHCA) has embarked on such an effort, Utah State and Australia would be in position to provide technical assistance as required. No projections can yet be made in the Middle East.

E. Utilization Plans

Technical assistance, training and data storage/retrieval services provided by IFI will contribute to the establishment of regional feed information centers, and their affiliation in INFIC. The information compiled in each of these regional centers will be disseminated to users, i.e., extension specialists, agricultural credit supervisors, farmers cooperatives, agricultural banks, and

farmers and livestock producers. Also, this information will be available, and interpretable, to other regional feed information centers, and other interested national and international agencies. Information will be largely stored and retrieved via computer, and disseminated as regional feed atlases, and feeding system and nutrient requirement publications.

It will be necessary to rely on national agencies and their personnel to interpret and facilitate the application of available feed composition data for producers who do not have access to this information, or who are illiterate.

Management Considerations

1. Scope of Work Implementation Plan

- a) Phase I (1st year - FY 78) Plans are as follows:
 - 1) Feed composition data will be collected in the Mid East which will be coded, put on magnetic tape, and summarized.
 - 2) As data is generated in the laboratories in Mid East countries, it will be forwarded to IFI where it will be coded, processed and stored in the data bank. Also data from regional centers will also be added to the data bank. Periodically tables on feed composition will be prepared (tapes, micro, fiches, bulletins, etc.). These tables will be used by government agencies, private business and farmers in balancing diets for animals. This information will be made available to all appropriate users upon request. IFI will provide technical assistance as to how the data should be used by farmers, researchers, extension personnel, teachers, and feed manufactures in LDCs to formulate animal diets. To this end, workshops and seminars will be conducted.
 - 3) IFI will support INFIC and regional centers in establishing the "International Vocabulary" and standardization of an analytical and biological methods in laboratories around the world.
 - 4) IFI personnel will provide technical assistance in establishing regional feed information centers in the Mid East and Latin America, and in Asia and Africa if indicated.

- 5) IFI will train graduate research assistants and personnel from LDCs in data processing and chemical and biological methodologies used in the international systems.

b) Phase II (2nd, 3rd years - FY 1979 and 1980) Plans are as follows:

- 1) Continue activities planned for phase I.
- 2) Prepare updated composition tables for the Mid East. Help other centers prepare updated feed composition tables for Africa, South East Asia, and Latin America.
- 3) Prepare and publish short instructions on how to balance diets manually, and by computer. This material will be used in seminars and workshops.

2. Sole Source Procurement

This will be a sole-source procurement contract, since the project will be an extension of on-going activities, and since the present contractor not only has demonstrated institutional competence to execute this project, but also has predominant capability in developing feed information systems.

3. Project Review

The project will be evaluated in detail by a review and evaluation team during the second year of the contract extension. This evaluation will be conducted by an on site visit composed of qualified outside consultants and will include at least one member from a LDC in Africa, Middle East, Asia or Latin America.

4. Project Background

As early as 1948, Utah State University scientists began to develop a system to describe feeds. In the late 1960s the Food and Agriculture Organization of the United Nations (FAO) was informed about the Utah State University system.

In 1970, FAO made a survey of feed evaluation systems. As a result of the survey, scientists working in this area were invited to a meeting in Rome (FAO) to explore ways of achieving worldwide cooperation in collecting feed composition data and describing feedstuffs. As a result of this meeting, the International Network

of Feed Information Centers (INFIC) was organized to describe, collect, summarize, and publish feed composition and related data.

By this time Dr. Harris and his associates at Utah State University had developed a system for describing feeds according to their physical and nutritional characteristics. Nine components were used to characterize a feed:

- Scientific name
- Origin (or parent material)
- Species, variety, or kind
- Part eaten
- Process(es) and treatment(s) to which the parent or part eaten was subject prior to being fed to the animal.
- Stage of maturity
- Cutting (primarily forages)
- Grade (Official grades with guarantees, etc.)
- Classification (according to nutritional characteristics)

Also, approximately 450 attributes (nutrients, etc.) were defined and coded for use on electronic computers. This system, with modifications from the Hohenheim system developed by Dr. H. Haendler is now known as the "International Feed Nomenclature System," and was adopted as the system to be used by INFIC.

In 1971, TA/AGR contracted with the University of Florida to compile, process, publish and disseminate information on the nutrient composition of feedstuffs for livestock in Latin America. The Utah State University system of feed nomenclature was utilized, and Utah State staff provided integral technical assistance in the design and implementation of this project. This project was successfully completed in 1974 with the preparation and publication of complete and an abridged editions of "Latin American Tables of Feed Composition".

Following the completion of the contract with the University of Florida, a contract was awarded to Utah State University in 1975 to develop a worldwide project for the compilation and dissemination of information on the nutrient composition of feedstuffs available in LDCs.

In 1972, the International Feedstuffs Institute (IFI) was organized at Utah State University to participate in the INFIC organization and discharge the obligations of the United States associated with the project.

Efficiency of livestock production varies around the world. One major reason is that the nutritive value (composition) varies considerably by the type of feed and by geographic areas for the

same types of feed. Information about the nutritive values of various feeds is generally inadequate or non-existent in LDCs. If this information were available to LDC livestock farmers, then the efficiency of livestock production could often be increased. The body of information on the composition of livestock feed is growing in some countries, and in some areas of the world. A central data bank at Utah State University has been established so information can be funneled in from the regional centers, systematically processed and sent back to each center. Each center will then distribute the data to users in LDCs.

Utah State University has been designated as the central data processing center and has agreed to perform this function at this stage of development. At present the Hohenheim and Utah Centers are the only ones which are fully operative. A major objective of this project is to establish a network of regional feed information centers. Regional centers will be supported by countries and institutions within their region and will service their regions. Utah State University will give technical aid to help all centers become fully operative so they may pass the nutritional data on to the users -- farmers, feed manufacturers, consultants, researchers and extension personnel.

5. Principal Accomplishments to Date

A detailed report concerning accomplishments and utilization can be found in the annual report on the Feed Information System, 931-11-130-050-73.

Principal accomplishments are:

- (a) Feed nomenclature. A multi-lingual feed composition vocabulary (five languages) has been established.
- (b) Feed composition data. Documentation has been prepared for 8093 feeds, feed composition data from 60,000 individual samples have been processed and stored.
- (c) Symposium and Workshop. An international symposium on "Feed Composition, Animal Nutrient Requirements and Computerization of Diets" was held at Utah State with participants from 25 LDC's and 11 developed countries, and was followed by a two week workshop with participants from six countries.
- (d) A meeting was held in Stuttgart in personnel from Germany, France and FAO to develop an international feed terminology.

(e) Training. Twenty-seven international and sixteen national workshops were held to train personnel in processing feed composition data.

(f) Establishment of Regional Feed Information Centers.

IFI participated in proceedings as related to the establishment possible establishment of nine regional feed information centers. These included field visits to the Middle East and Latin America.

(g) INFIC. The Utah State International Feedstuffs Institute participated in the establishment of INFIC, and in subsequent biennial meetings in Utah in 1974 and Ottawa in 1976.

(h) Publications. These include four books, two feed compositions tables for the National Research Council, and 26 papers.

G. Researchers Competence

The International Feedstuffs Institute in the Animal, Dairy and Veterinary Sciences Department, Utah State University has worldwide preeminence in conceptualizing and implementing systems to compile store and disseminate information on nutrient composition of feedstuffs.

Biodata for each of the five principal investigators can be found in the appendix. All participate in the current feed information project.

H. Contributions to Institution Building

The achievement of project purpose depends upon the establishment of country program/regional feed information centers that compile, process, store and disseminate information on feed composition that will assist their "users" (change agents, producers) in formulating efficient livestock rations. Fostering the development of LDC feed information centers that are self sustaining is integral to this project.

The IFI at Utah State has and will continue to provide technical assistance, training of feed information personnel, and computer services as needed in storing and retrieving data.

I. Financial Analysis and Plan

1. Computer and Related Equipment Provided by IFI

A. Computer and Related Equipment

Burrough B6700 computer with 786,432 bytes of core storage. Each bytes is 8 bits long and will store at least one character.

A B9484-3 disk system consisting of four spindles. Each spindle supports a disk pack with a capacity of 60.5 million bytes.

Two B9111 card readers that will read at the rate of 800 cards/minute.

A B9243-11 line printer with a print speed of 1100 lines/minutes.

A B9242-11 line printer with a print speed of 860 lines/minutes.

Two B939-1 tape drivers that will read/write 9 tract 1600 BPI tapes at a rate of 144 Kb.

A 9472-1 head/tract disk with a capacity of 15 million bytes.

B6350 Data Communications Processor that will handle a wide spectrum of teletypes and other remote terminals.

Data preparation and unit record equipment such as:

key punches,
verifiers,
card sorters, and
an interpreting key punch.

B. Printing Equipment

The International Feedstuffs, Institute has an IBM Composer Typewriter to set type for publications.

Utah State University has a Graphics Department and Printer Center for producing any kind of publication.

2. Budget

The "Offeror's analysis of cost proposal" is attached. Justification for the items listed follows:

A. Salaries

1. One-fourth of the principal and one-eighth of the co-principals time, one full time nutrition technician and one-half of a data processing technicians time will be paid from AID funds. Two graduates research assistants learning the international system and assisting with the processing of feed composition data will also be paid from these funds.

Utah Agricultural Experiment Station Funds will support the equivalent of 2.25 man years and one secretary at a yearly expenditure of approximately 57,200.

2. A modest amount of money will be provided to the San Jose Center. These funds will be used to adapt the international program to the facilities in San Jose and to send someone to Utah for training in the procedures involved in coding and processing feed composition data. Ten thousand dollars will be provided in 1977-78 and \$5000 in 1978-1979 of this purpose.

Experience indicates it is imperative to provide funds to cooperating LDC laboratories to expedite the transfer of data to the international source forms. This procedure will also be used in the Mid East Countries.

B. Consultants - none

C. Fringe Benefits

These amount to approximately 24 percent of contract and 12 percent of part-time employees salaries.

D. Overhead

The University requires 60 percent of the gross amount paid in salaries and wages to cover costs associated with the project.

E. Travel

U.S. - The modest amount budgeted for this purpose will be used to cover expenses connected with attendance at scientific meetings associated with feed terminology and collection and dissemination of feed composition data.

International - Provision is made for annual visits to Latin America, Middle East, Asia and Africa, and with an additional visit each year to two of the four regions. These visits are integral to the achievement of project purpose in assisting in the development of regional feed information centers and to advise and assist in the technical aspects of data documentation. Center personnel will be briefed on all modifications and additions to the international system. Seminars and workshops will be held in conjunction with these visits. Whenever possible, travel to INFIC meetings will be incorporated with travel to regional feed information centers.

In Latin America, yearly visits will be made to San Jose to assist with the technical implementation of the system. During the first year a specialist in computer programming and documentation will assist the San Jose group in converting the computer software to ensure that it is functional in every respect on their computer hardware.

Travel to the Middle East will be for the purpose of following up on contacts made with several institutions in these countries as related to the establishment of a regional feed information center to service

the countries, and to provide technical assistance as necessary in the implementation of these activities.

Travel to Asia will be for the purpose of assisting APHCA in implementing their feed information activities.

Travel to Africa would be coordinated with ILCA, Hohenheim and IEMVT. These institutions are expected to have major involvement in the establishment of an African feed information center.

F. Allowance

Per diem will be provided each traveler in accordance with the University schedules.

G. Other Direct Costs

Publications. Assistance will be given to regional centers in preparing publications on animal feeding systems. These publications are intended for use by personnel in LDCs to formulate diets adequate to meet the nutritional requirements for maintenance, growth and production in domestic animals.

During the last year of the contract (FY 80) the "International Documentation System" will be completely updated to include all data generated and to make any revisions to the procedures and terminology as recommended by INFIC and other advisory committees.

H. Materials and Supplies

The primary expense will be the cost of computer programming and computer services. This includes card punching and verification, disk and tape storage, the listing of data and correction of errors, sorting, printing out feeding composition tables, programming expenses and computer time and related materials. General office supplies, postage, communication (telephone and telegram) and miscellaneous expenses are included in this category.

I. Participant Training

Funding is provided for two graduate assistants from developing countries.

J. Subcontracts - none

J. Environmental Consideration

No adverse environmental consequences are anticipated in the compilation and dissemination of information on the nutrient composition of feedstuffs.

K. External Review

The external review team report is attached. They support an extension of this project for three years. Their recommendations were taken into consideration in the preparation of this proposal, and are in agreement with the proposal as presented.

The reviewers are recognize livestock production specialists. Dr. Jake Krider, Chairman of the Review team, and Professor Animal Nutrition, Purdue University has held important posts in industry, at Purdue University as Chairman of the Animal Science Department and Professor of Nutrition, and was integrally involved in the development of Purdue University's contract in Vicosa, Brazil. Dr. H.H. Stonaker, former Dean of the College of Agriculture at Colorado State University has had extensive domestic and international experience. At Colorado State, he was leader of Animal Breeding before becoming Dean of the College of Agriculture. He was awarded Fullbright professorships in India and Egypt. He served for four years as animal breeding specialist from 1971-1975. Dr. Manuel Ruiz is a native of Peru, obtained his Ph.D. degree in swine nutrition at Iowa State University. He then accepted the position as livestock nutritionist in CATIE, Turrialba Costa Rica, position which he still occupies. He has made noteworthy accomplishments in cattle nutrition and feeding systems research under tropical conditions, and as a teacher and advisor for graduate students in animal production.

L. General Appraisal

Significant accomplishments have been made during the first two years of the present contract. However, the development of regional feed information centers has not progressed as rapidly as anticipated. One contributing factor has been the limited involvement of FAO in the development of INFIC and the regional centers.

Project leadership has been of the highest caliber. Dr. Harris has excellent qualifications, is preeminent in this field. Cost/benefit ratios have been highly favorable, and attributable to the effective integration of U.S. and LDC activities in IFI combined with conservative budgeting and program approaches.

Utah State has provided principal support for US feed information activities.

This project responds to a worldwide need to provide improved feed composition information to facilitate the efficient formulation of livestock diets in LDC's.

An extension is recommended in order to foster the development of regional feed information centers in Asia, Middle East, Africa and Latin America, and to contribute to the solidification of INFIC. This proposal is sound, and cost estimates are conservative, and commensurate with proposed work programs.

Feed Information Systems - Utah State University

<u>PROPOSED BUDGET</u>	11/15/77 to <u>11/14/78</u>	11/15/78 to <u>11/14/79</u>	11/15/79 to <u>11/14/80</u>	<u>TOTAL</u>
Salaries, Wages:	40,400	42,824	45,393	128,617
Fringe benefits:	6,123	6,490	6,880	19,493
Indirect costs:	24,127	26,486	27,174	77,787
Travel, transportation, per diem:	13,000	20,000	5,000	38,000
Consultant cost:	-	10,000	8,303	18,303
Equip. Materials and Supplies:	26,200	34,000	9,000	69,200
Seminars:	-	-	10,000	10,000
Printing and distribution:	-	10,000	13,000	23,000
Other Costs; Office, etc.	<u>150</u>	<u>200</u>	<u>250</u>	<u>600</u>
TOTAL	\$110,000	\$150,000	\$125,000	\$385,000

NOTE: Initial funding covers 2-years to 11/14/79 = \$260,000.

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project:
From FY 11/74 to FY 11/77
Total U.S. Funding \$600,000
Data Prepared: 7/27/77

Project Title & Number: Feed Information Systems - 931-0050 (Utah State Univ.)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: To improve the efficiency of livestock production in LDCs by providing computerized information on composition of forage plant species, including grasses and legumes, other roughages and feeds constituents that are available for livestock nutrition. Assist LDCs develop productive feeding systems that are nutritional balanced.</p>	<p>Measures of Goal Achievement: (a) Acquisition of feed composition data from specialist in LDCs, of indigenous feedstuffs produced under specified conditions, expressed in acceptable standardized form for computerization. (b) The enlargement of the data bank on tropical feedstuffs grown in LDCs. To classify, edit, and summarize in-coming data to facilitate summarized print-outs upon requests from LDCs. (c) To identify and report regional situations and type of additional composition data needed.</p>	<p>Dissemination of statistical information relating to nutrient composition of feedstuffs available for livestock support in LDCs of each geographic region, as the voluntary collection of data permits. Support the creation of country feed information centers, to collect new analytical data to supplement the world data bank at the International Feedstuffs Institute at Utah State. Undertake assistance to LDCs in utilization of data for development of effective feeding systems for livestock producers in specific situations.</p>	<p>Assumptions for achieving goal targets: The network of independent feed information centers FAO, Canada, Australia, Germany, L.A., etc. plus CIAT, ILCA, and individual LDCs) continue contributing new feed composition data, in return for information services from this project which is world-wide. Livestock producers in LDCs will receive growing assistance from respective government in efficient use of feeds for enhanced p production.</p>
<p>Project Purpose: To maintain an international bank of feed composition data contributed by livestock and specialists in a world-wide LDC network, and provide print-outs of all pertinent data at nominal cost, upon request from specific LDCs. Thus, facilitating formulation of the most nutritious feed rations that are feasible, and identification of deficiencies that should be corrected by suitable feed supplements, at least cost.</p>	<p>END OF PROJECT STATUS: (a) viable and functioning Feed Information Center; (b) LDCs will receive prompt printouts to specific requests for available tables of feed composition for designated situations, in a form suitable. (c) Active contributions by LDCs to enlarge the worldwide data bank, region by region, with more complete feed composition data.</p>	<p>(a) Cooperation in exchanging information on feed composition with established feed centers in Latin America, FAO-Rome, Australia, Canada, Germany, etc. (b) Provision of updated print-outs of data available in the Utah data bank, in request to requests from LDCs for available information for specified situations in LDCs. (c) Publication of guidelines (state-of-the-art) describing methods of utilizing composition data.</p>	<p>Assumptions for achieving purpose: All regional and country feed information centers will honor pledges to acquire and forward to Utah State new feed composition data, to develop more complete world-wide knowledge on nutritional values of indigenous feedstuffs.</p>
<p>Outputs: (a) Publications summarizing average nutritional conditions of plant growth and stage of maturity. The major components are energy compounds, protein, mineral content, fiber content and TDN (total digestible nutrients). (b) Conduct workshops and seminars on basic principles of utilizing feed composition data to formulate livestock rations. (c) Provide on request from cooperators, specific computer print-outs drawn from the world-wide bank of data maintained at Utah State</p>	<p>Magnitude of Outputs: (a) Projected publication of summary tables on feed composition submitted by cooperators in the tropics and subtropics. (b) Periodic bulletins distributed to all cooperators, reporting on significant deficiencies in data needed by livestock nutritionists. (c) Contributing to periodic international workshops and use of data for support of livestock production. (d) Serve as the principal U.S. Agency to work with the International Network of Feed Information Centers (6 independent centers in 1977), for collection, summarization</p>	<p>Review of data print-outs and publication issued. Review of participation by the Utah project staff in local, regional, and international workshops, seminars, and training programs in which feed composition data are important components. Report periodically on scope and accretion of useful data received by the Utah project.</p>	<p>Assumptions for achieving outputs: LDC's will utilize the International Feed Composition Institute data bank, by requesting specific print-outs of information relative to information pertinent to country feed problems and that regional feed problems. And that regional feed centers will continue full cooperation in sharing new data with Utah State in return for coordinated data from all sources made available on request. Including CIAT and ILCD.</p>
<p>Inputs: a. AID contract with Utah State University (\$260,000) FY 77. b. Utah State Computer facilities on time utilized basis. c. Experience and expertise of the Utah State computer staff, to receive feed composition data from worldwide sources, to classify and organize data to facilitate subsequent extraction of information for print-outs and to prepare summaries requested by LDC cooperators, on specific situations.</p>	<p>and reporting of feed data. IMPLEMENTATION TARGET: Summarize yearly new data acquisitions for previously unreported feeds, and geographic coverage; and new participating cooperators. Tabulation of print-outs of data requested by LDCs. Participation of Utah State in workshops, seminars, and training for effective use of feed composition data.</p>	<p>Annual reports, and periodic evaluations by AID agencies, to summarize progress made, and to plan for the future.</p>	<p>Assumptions for providing inputs: That this Utah State project will be funded by AID as proposed. That all other national, regional, and international feed information centers will be individually financed, and that nominal fees by this Utah State program will be honored by all other agencies requesting Utah State print-outs and other computer services. The other information feed centers will continue to voluntarily continue to contribute all new feed information data to Utah State.</p>

Revised Budget, August 1, 1977

Feed Information Systems - Utah State University

<u>Categories</u>	<u>1977-1978</u>		<u>1978-1979</u>		<u>1979-1980</u>	
	<u>Work Months</u>	<u>Dollars</u>	<u>Work Months</u>	<u>Dollars</u>	<u>Work Months</u>	<u>Dollars</u>
Salaries	36	\$39,150	36	\$40,585	36	\$40,223
Wages		15,160		10,750		5,500
Fringe benefits		8,165		8,865		9,146
Overhead 60%		23,490		24,351		24,134
Travel U.S.		1,000		1,200		1,200
Travel International		11,730		6,612		7,022
Per diem		5,200		4,635		5,170
Publication		4,000		4,000		12,000
Computer Costs, Office Supplies		21,105		22,002		20,508
Insurance		141		129		87
Other Costs		7,730		--		--
TOTAL		<u>\$136,871</u>		<u>\$123,129</u>		<u>\$125,000</u>
Cumulative Total				1977-79 = \$260,000		\$385,000

PROJECT APPRAISAL REPORT (PAR)

(4)

PAGE 1

1. PROJECT NO. 931-11-130-050-73	2. PAR FOR PERIOD: October 1975 to April 1977	3. COUNTRY TA Bureau	4. PAR SERIAL NO.
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5. PROJECT TITLE

Feed Information System

6. PROJECT DURATION: Begin FY <u>75</u> Ends FY <u>77</u>	7. DATE LATEST PROP 8/12/74	8. DATE LATEST PIP -	9. DATE PRIOR PAR December 24, 1975
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10. U.S. FUNDING	a. Cumulative Collection Thru Prior FY: \$ <u>340,000</u>	b. Current FY Estimated Budget: \$ <u>250,000</u>	c. Estimated Budget to completion After Current FY: \$ <u>125,000</u>
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11. KEY ACTION AGENTS (Contractor, Participating Agency or Voluntary Agency)

a. NAME Utah State University Logan, Utah 84322	b. CONTRACT, PASA OR VOL. AG. NO. AID/ta-C-1159
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I. NEW ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

A. ACTION (X)			B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
USAID	AID/W	HQST		
	X		1. Project statement for USAID funding prepared	March 1977
	X		2. Project submitted to R & DC for approval	May 1977
	X		3. Development of PAF and PIO/T for project extension	June 1977
		USU	4. Utah State University will assist in the realization of a feed information workshop in Latin America.	October 1977
	X		5. Develop next year work plan and next PAR	March 1978

D. REPLANNING REQUIRES REVISED OR NEW: <input checked="" type="checkbox"/> PP <input type="checkbox"/> PIP <input type="checkbox"/> PRO AG <input checked="" type="checkbox"/> PIO/T <input type="checkbox"/> PIO/C <input type="checkbox"/> PIO/P	E. DATE OF MISSION REVIEW
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PROJECT MANAGER: TYPED NAME, SIGNED INITIALS AND DATE TA/AGR, Ned S. Raun <i>Ned S. Raun</i>	MISSION DIRECTOR: TYPED NAME, SIGNED INITIALS AND DATE TA/AGR, Leon Hesser <i>L. Hesser</i> 6/11/77
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FEED INFORMATION SYSTEM

Utah State University

931-11-130-050-73

External Review

This project was reviewed by an external review team in November 1977. Dr. Jake Krider acted as chairman, Drs. H.H. Stonaker and Manuel Ruiz were the other two review team members. A copy of their report is attached.

The recommendations of the review team were taken into consideration in the preparation of a project statement for extension of this project FY 78-80. This proposal will be submitted to R & DC in May 1977. Principal objectives are 1) to provide technical assistance in the establishment of regional feed information centers in LDC's and the dissemination of information on the nutrient composition of feedstuffs to facilitate the formulation of efficient livestock diets and 2) to contribute to the consolidation of the International Network of Feed Information Centers (INFIC).

Principal Project Accomplishments

- a) Feed nomenclature. A multi-lingual feed composition vocabulary (five languages) has been established.
- b) Feed composition data. Documentation has been prepared for 8093 feeds, feed composition data from 60,000 individual samples have been processed and stored.

- c) Symposium and workshop. An international symposium on "Feed Composition, Animal Nutrient Requirements and Computerization of Diets" was held at Utah State with participants from 25 LDC's and 11 developed countries, and was followed by a two week workshop with participants from six countries.
- d) In 1974 a meeting was held in Stuttgart with personnel from Germany, France and FAO to develop an international feed terminology.
- e) Training. Twenty-seven international and sixteen national workshops were held to train personnel in processing feed composition data.
- f) Establishment of Regional Feed Information Centers. The Utah State International Feedstuffs Institute (IFI) participated in proceedings as related to the establishment of nine regional feed information centers. These included field visits to the Middle East and Latin America.
- g) INFIC. IFI participated in the establishment of INFIC, and in subsequent biennial meetings in Utah in 1974 and Ottawa in 1976.
- h) Publications. These include four books, two feed composition tables for the National Research Council and 26 papers.

Evaluation

Significant accomplishments have been made during the first two years of the present contract. However, the development of regional feed information centers has not progressed as rapidly as anticipated. One contributing factor has been the limited involvement of FAO in the development of INFIC and the regional centers.

Project leadership has been of the highest caliber. Dr. Harris has excellent qualifications, is preeminent in this field. Cost/benefit ratios have been highly favorable, and attributable to the effective integration of U.S. and LDC activities in IFI combined with conservative budgeting and program approaches.

Utah State has provided principal support for U.S. feed information activities.

This project responds to a worldwide need to provide improved feed composition information to facilitate the efficient formulation of livestock diets in LDC's.

An extension is recommended in order to foster the development of regional feed information centers in Asia, Middle East, Africa and Latin America, and to contribute to the solidification of INFIC.

This proposal is sound, and cost estimates are commensurate with proposed work programs.

To Dr. Ned S. Raun, Chief, Livestock Division
Office of Agriculture
TA/AID
State Department
Washington, D.C. 20523

December 15, 1976

From: J. L. Krider, Review Team Leader, Animal Sciences Department

Project Review Team: Dr. Manuel E. Ruiz, Nutricionista
Centro Agronomico Tropical de Investigacion y Ensenanza
Turrialba, Cost Rica
Dr. H. H. Stonaker
6529 E. Highway 14, Ft. Collins, Colorado 80521
and J. L. Krider, Purdue University, West Lafayette,
Indiana 47907

Re: Review of AID Project No. 931-11-130-050-73
Feed Information System
Utah State University, Logan, Utah
November 30 and December 1, 1976

Overall Evaluation. Progress to date on this project has been excellent. The Utah State University staff and support facilities including the computer center staff and equipment are outstanding. The staff works as a team being properly organized to tackle the objectives of the project productively. Utah State University and its staff are unique in having a solid base of experience, expertise, and support facilities to execute this project with objectivity and subsequent productivity.

Four faculty members in the International Feed Institute, Utah State University, three technicians and assistants and one full time secretary are devoting a major portion of time to the overall project. In addition, three persons in the computer center are part-time on the project at the University.

Members of the review team, were enthusiastic about the project and favorably impressed with the progress to date in spite of the many difficulties which have had to be overcome to reach the present level of accomplishments. The plans for 1976-77 were analyzed and some high priority areas of endeavor were agreed upon. These are indicated in part B of this report.

The review team recommends that this International Feed System project receive high priority consideration for the November, 1977 - November, 1980 period under the title "Improving Nutrition Information to Increase Livestock Production" with major emphasis on programs for the less developed countries (LDC's) and also providing some technical assistance to developing countries which will be participating with the Regional Feed Information Centers in the international system.

During the 1977-80 period, there should be much greater accomplishments than during the first three years because of the feed information in the feed data system, international nomenclatures for feeds, publications, documentation, and procedures developed through this project to date. Consolidation of the International Network of Feed Information Centers which are already in place and the development of critically needed new centers with emphasis on the production of feed data and feeding systems methodology for the LDC's are of the highest priority. Continued technical assistance of Utah State University staff will be critical to attaining success in attacking the 1977-80 project objectives. Furthermore, this solid project deserves short-term support both nationally and internationally through 1980, with understanding that major improvements in the utilization of the "bank" of 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 solid accomplishments, contributions and technical support base of the Utah State University project.

A. Evaluation of Project Results and Status to Date (1976).

Results to date exceeded expectations although much unfinished work remains to be done. Excellent progress has been made toward the accomplishment of the stated objective even though more high priority emphasis needs to be given to the development of feed information centers to provide feed composition and feeding systems information for the LDC's as well as the developing countries to use in improvement of livestock production. Future emphasis should be of the highest priority for the development of Regional (or country) Feed Information Centers in the Mid-East, Africa, Latin America and possibly the Far East. Dr. Stonaker's report includes several suggestions regarding the Mid-East and Far-East.

Leadership and technical assistance of Utah State staff at centers in U.S., Canada, FAO, France, United Kingdom and W. Germany (Hohenheim) have been essential and critical to the successes of this project to date, and are the key to future developments and successes. Australia must be encouraged to become a more active participant. Consolidation of the International Network of Feed Information Centers (INFIC) and the development of new centers to participate in INFIC are essential to generate feed and livestock feeding systems information for the LDC's and developing countries (DC's).

Domestic animals have much potential in the utilization of feed resources without competing with man for food on small farm holdings in the LDC's and developing countries of the world. These animals provide food, fiber, power, fertilizer and other products to improve man's welfare. They serve as bank accounts and reserve food supplies as well as making daily contributions to the welfare and food supply of small farm families. Progress toward the improvement of the utilization of feed resources by animals on small farm holdings in LDC's and developing countries must be a high priority goal of this project. It is recognized

that this progress toward animal production improvement will be based upon: (1) feed composition information; (2) utilization of local feed resources to meet animal requirements for maintenance and production including power; (3) development of feeding systems based on utilization of local feed resources; (4) publication of atlases and bulletins simplifying (1), (2) and (3); and (5) action-demonstration-education programs at the local level with animal producers. This project currently and in the future has the capabilities to make progress on the first four (4) of these basic steps. Within the individual countries, programs should be developed to implement step five (5) to help small livestock farmers in the regions where Regional Feed Information Centers are located for ultimate usage of the information. Simple approaches initially will be required to help small livestock holders utilize local feed resources in feeding systems to improve animal production.

Major accomplishments to date have been numerous. Those of greatest significance are:

1. Updating and documentation of 8093 distinct feeds.
2. Establishing a uniform multi-lingual vocabulary of feed terms internationally with computer print-out capabilities in 5 languages (English, French, German, Portuguese and Spanish).
3. Establishing the IIFIC network in the developed countries to collect and/or process feed data bank exchanges and adopt common computer capabilities.
4. Developing plans for a new center to serve Latin America.
5. Exploring plans for a potential center (s) in the Mid-East.
6. Organizing and conducting the International Symposium on "Feed Composition, Animal Nutrient Requirements and Computerization of Diets", July, 1976. There were 316 registrants from 25 LCD's and 11 other countries.

7. Training personnel in 27 international and 16 national workshops or seminars in proper procedures for handling data in the international system.
8. Participating in meetings to give technical papers directly related to the project.
9. Preparing, with the University of Florida, the Latin American Feed Tables in English with abridged tables in Portuguese and Spanish.
10. Publishing technical reports, scientific papers, popular articles and books directly related to the project.
11. Servicing numerous requests internationally and nationally for feed data to be used in country publications including the National Research Council (NRC) Feed Composition Tables in the U.S. The publication and use of feed data in bulletins, atlases, etc. is a major contribution of this project to the U.S., Canada, Europe, Latin America, and potentially other areas of the world including LDC's.

B. Recommendations on Plans for 1976-77.

High priority should be given to activities that will permit the collection and transfer of technical information (feed data, nutrient requirements, feeding systems, etc.) to users in the regions served by INFIC with emphasis on the LDC's and developing countries. This should include the establishment of the Latin American Center, San Jose, Costa Rica, supported by a workshop and Utah State University technical inputs. Major efforts should be made to develop methods, through appropriate regional and/or country scientists, to use the feed data in feeding systems to improve livestock efficiency in LDC's and developing countries recognizing that the goal will be to improve production rather than to maximize it.

Work needs to be done in collaboration with all centers (INFIC) to update and correlate procedures to permit publication of information (feed atlases, nutrient requirements, feeding systems, etc.) for country users in respective regions with emphasis on the LDC's. Work with FAO will be required to identify and establish a center or centers in the Mid-East (Egypt was also suggested) to collect known feed data and identify gaps in feed composition data. Workshops, seminars and other communications will be required. If schedules permit, a similar Utah effort should be made to identify a center in the Far-East, perhaps the Phillipines.

Contribute and encourage appropriate INFIC members to generate outputs for use in LDC's in Africa. The centers in Germany, France, and possibly FAO and ILCA (Ethiopia) should be encouraged to pursue this effort actively. As required and requested, a workshop should be planned for ILCA personnel so ILCA can become an important contributor to INFIC. Seminars and other appropriate methods should be considered.

The publication of country and/or feed atlases, nutrient requirements and feeding systems recommendations to utilize feed resources should be pushed with emphasis on the LDC's.

Other publications related directly to this project should be completed and published as soon as feasible.

Service to national and international groups by providing appropriate feed composition data tables is an important project activity. This includes data for U.S. National Research Council publications, as well as data for country and regional feed composition reports.

Efforts must continue to improve on the quality and quantity of feed data for the "bank" through scientifically accepted chemical and biological procedures.

C. Recommendations on Future Needs 1977-80.

It is critical that this project should continue so that "deposits" may be drawn from the feed data "bank" for usage to benefit LDC and developing country programs.

High priority needs and goals of Utah State University which is in a strong leadership position are as follows:

1. Participate in the consolidation of the International Network of Feed Information Centers (INFIC).
2. Provide technical assistance in the establishment of other regional feed information centers to help make INFIC a viable international network with emphasis on feed composition, nutrient requirements and feeding systems in publications to utilize available feed resources to improve animal production in the LDC's.
3. Collaborate with regional feed information centers to generate, compile and disseminate feed composition data to users. Encourage the publication of feed atlases, nutrient requirements and feeding systems utilizing examples from simple procedures for calculation of diets as well as computer formulation procedures. These may be approached on either by country or by life zones where the latter are mapped (altitude, latitude, temperature, rainfall, nutrition and feed data, etc.) and classified. Feed composition tables are valuable to users of available feed resources at every level of animal production technology from the small animal producers in the LDC's to the largest producers in the developed countries such as Europe, U.S., Canada, etc.

4. Develop procedures and generate data to fill important gaps in feed composition information with special consideration being given to important pasture species and stored forages ^{in a new mixed feeding system} for extending feed usage in LDC's and developing countries. This will require technical assistance in working closely with regional and national groups to identify and fill important feed information gaps including data on composition of important forages in LDC's as well as developing countries.

Technical assistance in the preparation of regional atlases on feed composition and their publication is recommended even though there will be gaps in the data. This will help focus attention on gaps in the data and encourage obtaining data to fill the gaps. Whenever feasible, nutrient requirements and feeding systems should be included in the atlases to help users to improve animal production efficiency in the LDC's and the developing countries.

The need continues for storage and retrieval of feed data at Utah State University as appropriate for the regional centers.

Finally, technical assistance from the Utah State staff will be required to provide many types of training to improve the capabilities of cooperating personnel in IIFIC, new regional centers, and LDC's. This should be done utilizing workshops, short courses, graduate and undergraduate training, and new regional and/or country publications.

Major focus should be toward the improvement of livestock production in the LDC's. In doing this, it must be recognized that benefits also will accrue to the benefit of animal producers in the developing and developed countries.

It is highly recommended that the Utah State University project should be supported by TA/AGR/USAID to help meet these needs and pursue these goals during 1977-1980.

Appended are the reports of Dr. Ruiz and Dr. Stonaker.

One major consideration of the review team was that U.S.A. financial support was lacking while benefits were substantial for meeting numerous demands for feed composition and nutrition data as well as other information to support scientists, animal producers and others in the United States. Feed data tables for NRC, National Academy of Science, publications should be of superior quality containing the best available data on composition of feedstuffs and availability to meet animal requirements.

To: Dr. J. L. Krider

December 15, 1976

From: H. H. Stonaker

Re: Utah - AID Project Review

General -- The unusual situation relative to the Utah project is the unique opportunity to help Dr. Harris and staff in their monumental effort. It seems unlikely that we will soon see another group as dedicated to such a burdensome but necessary documentation effort. In the absence of unforeseen problems, I would strongly urge continued support through to Dr. Harris' retirement in 1981 (Dr. Matthews indicated 3 years more and possibly 1 extra before Harris' retirement).

Specific recommendations -- Agreement between AID representatives or consultants and the Utah staff were noted in project plans and revisions. There are a number of these and I will not repeat them here as they will be presented by Utah in a revision. Thus, I will emphasize those few changes that I hope can be implemented.

1. High priority to at least one publication in 1977, giving pertinent tabular data on feeds in an additional LDC area. The "Middle East" appears to be the area most indicated. While this cannot be as complete as the Latin American Handbook, it will serve to give an example of the quantity and quality of material available, and the type of data still missing. It will provide AID with an additional valuable publication emanating from the project. Other geographic areas needing similar publications are India - Nepal - Bangladesh; Philippines, Malaysia; Australia - New Zealand - Indonesia; East Africa - West Africa; South Africa.

It is considered highly important that even one "incomplete" publication on tabular data be produced in 1977.

2. FAO through its field staff out on UNDP projects should be approached relative to LDC approval to include aid to INFIC by collecting pasture samples of species not yet chemically analyzed or not likely to be chemically analyzed and yet of nutritional importance to grazing animals in LDC's. Granted this will be made simpler if the French make available their data on pasture species from former French Africa. However, the opportunity still exists for much of Asia. By 1978, the amount of effort in this direction should be clearer. This would put FAO into an active role in this project which would be very desirable.

I am not too happy about the location of a Middle East Center in Baghdad despite FAO involvement there. Egypt would be better because of its greater depth in scientists and the special interest displayed by one Egyptian at the Workshop. Arab countries including Pakistan would be more likely to collaborate with Egypt. Iran and Israel will have to be considered separately and will probably be able to contribute directly to Utah independently. India, Nepal and Bangladesh would probably work closely with the federal Indian Agricultural Research Institute in New Delhi. Plans for data contributions from Australia and the Philippines need no further comment as Dr. Harris and Dr. Raun have direct contacts there.

I endorse continued concentration on accumulating tabular material especially on pasture species in LDC areas. Other studies or projects on the utilization and application of information in LDC's should be independently organized and not detract from the completion of this work by the present Utah project staff.

The following questions and comments are given about the project for future consideration.

- 1) What contact has been made with feed companies in LDC's relative to the analyses they have on local feeds? Purina in Colombia, for example, was getting amino acid analyses in addition to other information. Purina probably would offer assistance in the LDC's in which they operate.
- 2) Emphasis at labs should be given on INFIC's interest in ring tests. Funds are not yet allocated for providing for analysis that cannot be economically done in LDC's. Is Hohenheim set up for this?
- 3) In general, I think a center will be more useful when interest at a local university and a local tenured scientist is used in preference to FAO or other organizations being used as the responsible agency. The problem as discussed, is too little continuity in personnel. Thus, a relationship should be developed on individual situation basis.
- 4) For the time being, I prefer regional publications on a country basis rather than ecologically. The reason being that most users will be interested in local feeds irrespective of ecological zone.
- 5) I think the use of PL 480 funds for seeking Fulbright Research Scholars to do work along the lines of Chris Christiansen's in Latin America might serve in India, Egypt, and the Philippines.

REPORT
ON THE ACCOMPLISHMENTS AND FUTURE WORK PLANS
RESULTING FROM THE PROJECT ENTITLED
"FEED INFORMATION SYSTEM"

Manuel E. Ruiz
Consultant
AID Review Committee

Submitted to Dr. J. L. Krider, Leader of the
AID Review Committee

1. Date of review: November 30 and December 1, 1976.
2. Place: Utah State University, Logan, Utah,
U.S.A.
3. Objectives:
 - a. To review the work carried out by Utah State University under the Project "Feed Information System" (AID Project No. 931-11-130-050-73).
 - b. To evaluate the work plan and budget for the period November 16, 1976 to November 15, 1977.
 - c. To evaluate other future work plans as contemplated in an application for a new contract from AID regarding the Project entitled "Improving Nutrition Information to Increase Livestock Production".
4. Personnel contacted:
 - a. Project Personnel
 - Dr. Lorin E. Harris, Leader and Director of the International Feedstuffs Institute (IFI), Utah State University (USU).
 - Dr. Léonard C. Kearl, Associate Director of IFI.
 - Dr. Paul V. Fonneseck, Research Associate, Department of Animal Dairy Sciences, USU.
 - Mr. John J. Pierce

-Mr. Howard Lloyd

b. Other participants:

-Dr. Doyle J. Matthews, Dean, College of Agriculture,
U.S.U.

-Dr. Kent R. Van Kampen, Head, Animal Dairy Sciences
Department, U.S.U.

-Dr. John E. Butcher, Professor, Department of Animal,
Dairy and Veterinary Sciences, U.S.U.

-Dr. William C. Christiansen, Formerly Leader of the
Feed Composition Project at University of Florida.

-Mr. R. Welling Roskelley, Retired, Formerly Leader of
the Farmer Scholar Program in the Phillipines.

-Mr. Karl A. Fugal, Assistant Director, U.S.U. Computer
Center.

-Dr. Ned S. Raun, Chief, Livestock Division, Office of
Agriculture, Bureau for Technical Assistance, AID

-Dr. J. L. Krider, Professor, Animal Sciences Department,
Purdue University, and Leader of the AID Review Committee.

-Dr. Howard Stonaker, Consultant, AID Review Committee.

5. Documents reviewed and discussed:

a. Animal Nutrition Research at Utah State University and
Cooperating Agencies.

b. First International Symposium on Feed Composition, Animal
Nutrient Requirements, and Computerization of Diets.
Abstracts.

c. Maximizing Profits by Use of a Computer to Calculate Diets
for Dairy and Beef Cattle and Sheep. Cooperative Extension
Service, International Feedstuffs Institute and Depart-
ments of Animal and Dairy Sciences, Utah State University,
Logan, Utah. 1974.

d. Current USAID Contract (with amendments) with Utah State
University Contract No. AID/ta-C-1159, Project No. 931-11-
130-050-73).

- e. Annual Report November 15, 1974 to November 15, 1975, on Project No. 931-11-130-050-73.
- f. Annual Report November 15, 1975 to November 15, 1976, on Project No. 931-11-130-050-73.
- g. Harris, L. E., H. Haendler and L. R. McDowell. International Feed Nomenclature, a Reprint from Proceedings of the Conference on Animal Feeds of Tropical and Subtropical Origin, Tropical Products Institute, 1st-5th April. 1974.
- h. Harris, L. E. and L. C. Kearl. International collection and dissemination of information on animal feeds. Article taken from Report on Project 079, Journal Series No. 1835. Utah State University.
- i. Harris, L. E., J. M. Asplund and E. W. Crampton. An international feed nomenclature and methods for summarizing and using feed data to calculate diets. Utah State University, Agricultural Experiment Station Bulletin 479, 1968.
- j. Hand-out Sheets containing summarized information on (i) Project Accomplishments, (ii) Work to be accomplished in 1977, (iii) Work to be accomplished by IFFIC prior to 1977 Meeting, (iv) Recommendations of IFFIC, (v) Objectives of Project Proposed for November 1977 to November 1980, (vi) USU Computer Center.
- k. Improving Nutrition Information to Increase Livestock Production. Application for a Contract from the Agency for International Development. International Feedstuffs Institute, Utah State University. 1976.
- l. Project Statement and Noncapital Project Paper (PROP), Referred to Project Proposed for 1975-1980.
- m. United States Feed Data Bank. An application for a grant-in-aid from the U.S. Department of Agriculture. Utah State University.

6. Results:

- a. Work accomplished during the period November 1974-November 1976.

Most outstanding among accomplishments is the international agreement on a common nomenclature for feedstuffs and a common procedure to permit their computerization and free

exchange of information. To this end the Project has played a key role both as an initiator and as the principal processing and editing Center. The results of this work (documentation of 8093 distinct feeds) are readily available in five languages.

Through the creation of INFIC, which was made possible by the initiatives shown by the Project, it is now feasible to promote the formation of Regional Feed Information Centers with automatic membership in INFIC and immediate technical assistance by more experienced groups.

Several types of activities (local visits, the International Symposium on Feed Composition, publications, workshops and seminars on procedures and coding) have served well to establish links among people and institutions from various parts of the world and to provide knowledge of the principles of the Feed Composition Project. However, despite all the activity displayed in this regard, it would appear that the Project (and INFIC) has not been sufficiently successful in making itself widely known and its objectives understood, at least in Latin America. This situation arises from the fact that there is a shortage of manpower and money in the Project at the data processing and higher technical levels. For example, almost a year's delay is expected in the publication of the Proceedings of The International Symposium. Also, the direct connection that the University of Florida had established with the collaborating laboratories in Latin America has almost disappeared.

- b. Work Plan Projected for the period November 1976 - November 1977.

It is recommended that the highest priority should be given to any activity that will permit the transference of technical data to farmers, extension agents and private industry and professional people in the LDC's. Also, the best efforts should be devoted to providing technical know-how related to the organization of Regional Feed Composition Centers and related to improved feed analysis procedures. Specifically, for the coming year, the Project should provide technical help for the formation of the Latin American Center for Feed Composition and Feeding Systems. Several factors have come together to indicate that the formation of the Latin American Center is highly likely and that it will be receiving widespread support

from national institutions and significant help from the Inter-American Institute of Agricultural Sciences (IICA) of the Organization of American States. This Institution has promised help in the search for and free administration of funds, collaboration through the use of its computation facilities and participation of its statistician and computer operators. In addition, through its representatives in each American country, and its Inter-American Documentation and Information Center, IICA can easily establish a network for retrieval and distribution of data.

Several Latin American groups have already endorsed the possibility of locating the Regional Center in San Jose where, in addition to IICA, the University of Costa Rica and the Tropical Agricultural Research and Training Center (CATIE) would play important organizational and operational roles.

As far as the regional need for such a Center is concerned, it suffices to state that at the 1975 Latin American Association of Animal Production (ALPA) Meeting in Venezuela there was unanimous support of the idea of holding a Workshop in San Jose in 1977 in order to discuss what type of biological information should be obtained, processed and distributed that would best fill the needs of the Latin American rural people and the professional workers. Also, it was reported during the review Meetings in Logan, that Mexico was requesting technical collaboration for the pooling and publishing of Mexican Feedstuffs Nutritional Information. Other countries may follow this example.

It is evident that funds must be found to finance the San Jose Workshop. This is the logical initial step for the organization of the Latin American Regional Center. It is calculated that nearly US\$7,000 is needed for travel and Per diem expenses of 8 representatives of 4 ecologically different zones. To the effect of obtaining financial help from AID, contact will be made with the Director General of IICA to officially request this support.

Making the technical data available to LDC's is another activity of high priority. In fact, in reference to the Latin American Center, one of its first activities could be publication of feed composition tables per country or per life zone, or both. This would require the assistance of Utah State University.

The identification of a Middle East country to host the Regional Center should receive more attention. That is to say, that closer contact with arab institutions is needed to detect advantages and disadvantages in various aspects. This activity, again, clearly falls within the general recommendation that IFI should project more towards the LDC's.

Relations with INFIC should continue to be strengthened during this year. Particular attention should be given to the question of FAO's sponsorship of INFIC. Either in conjunction with this or as a separate issue, INFIC should also establish a working relationship with the AGHIS System, which would greatly facilitate the dissemination of feed composition data and technical (literature) information to the LDC's. To this end, IICA-CIDIA (in San Jose, Costa Rica) could provide advice and endorsement.

- c. Proposal of a New Contract from AID concerning the Project "Improving Nutrition Information to Increase Livestock Production"

The progress obtained through the work of IFI and AID must not be truncated. In fact, the point has been reached whereby there now exists a massive body of information, and a knowledgeable group (IFI and INFIC) which should be put to use in a more direct manner for the benefit of local LDC Programs.

A special effort should also be directed towards the integration of feed data with the feeding systems concept and methodology. This implies working closely with regional and national groups in the identification of information gaps (for example, more information on grass management's effects on its utilization is needed) and new biological parameters (for example, input-output relationships). Assistance with improved laboratory and computational procedures should also become an important feature of the new Project. This component includes the special training of laboratory and computer technicians for short periods. With regard to Latin America, IFI in collaboration with the Regional Center could initiate correlation studies between feed composition (and nutrition data) and ecological variables, taking advantage of

existing life zone mapping and classification. The basic idea is to obtain as much benefit from the data bank as possible, to ultimately achieve a more efficient utilization of local food, human and land resources in the JDC's for the improvement of their peoples' quality of life.

cc: NSRaun (AID)
JEArcaujo (IICA)
JSoria (CATIE)
JMuñoz (CATIE)

December 8, 1976
MER/efl

PPC/FDI

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AGENCY FOR INTERNATIONAL DEVELOPMENT
**PROJECT AUTHORIZATION AND REQUEST
 FOR ALLOTMENT OF FUNDS PART I**

1. TRANSACTION C

C A - ADD
 C - CHANGE
 D - DELETE

PAF

2. DOCUMENT CODE
 5

3. COUNTRY/ENTITY

TA Bureau

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 digits)

931-0050

6. BUREAU/OFFICE

A. SYMBOL
 TA

B. CODE
 08

7. PROJECT TITLE (Maximum 40 characters)

Feed Information Systems

8. PROJECT APPROVAL DECISION

ACTION TAKEN

A A - APPROVED
 D - DISAPPROVED
 DE - DEAUTHORIZED

9. EST. PERIOD OF IMPLEMENTATION

Extension

YRS. 03

QTRS. 0

10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY 77		H. 2ND FY 78		K. 3RD FY 79	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) FN	184I	078		260					
(2)								125	
(3)									
(4)									
TOTALS				260				125	

A. APPROPRIATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED	
	Q. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	(ENTER APPROPRIATE CODE(S)) 1 = LIFE OF PROJECT 2 = INCREMENTAL LIFE OF PROJECT	
(1)					385			
(2)								
(3)								
(4)								
TOTALS					385		C. PROJECT FUNDING AUTHORIZED THRU FY	

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO.	
	C. GRANT	D. LOAN
(1)		
(2)		
(3)		
(4)		
TOTALS		

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/FM/FSD)
 SIGNATURE
 DATE

14. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 LOCAL OTHER

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

N/A

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE
		MM DD YY		MM DD YY

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

ENTITY : TA Bureau
PROJECT TITLE: Feed Information Systems - Utah State University
PROJECT NO. : 931-0050

1. I hereby authorize grant funds not to exceed \$385,000 for a three-year contract to be negotiated with Utah State University to assist in the development of feed information systems in LDCs that will facilitate the formulation of efficient livestock diets and development of practical feeding systems using locally available feed sources. During the course of the project technical assistance will be provided to contribute to the establishment of regional feed information centers in Latin America, Africa, Asia and Middle East and in the organization and implementation of feedstuff composition activities in these centers as related to (1) the establishment of regional committees to work out feeding systems for LDC's (2) preparation of feed composition tables in various forms, (format, abridged tables, magnetic tapes, computer printouts and on-line information) and (3) advising committees within LDC's on how to utilize information on feed composition and animal nutrient requirements. Animal scientists in LDC's will receive training on methods of collecting, processing and dissemination of feed composition information through seminars, workshops and short courses.
2. This project will be incrementally funded in the amount of \$260,000 in 1977 for the first two-years of the contract and with \$125,000 in FY 1979 for the third contract year.
3. The project was reviewed and endorsed by R&DC at the August 23, 1977 meeting. There are no special conditions, covenants or waivers required by the Grantee.

Ref:

1. Memo Hesser to AA/TA dated August 31, 1977
2. Research Project Statement
3. Memo Hesser to Farrar on recommendation for predominant capability dated 8/3/77.
Clearance:

TA/AGR/L, NSRaun *LSR*
TA/AGR, DClark *DC*
TA/AGR, LHesser *Yok*
TA/PPU, KMilow *2/11/77*

M. B. Belcher for C. Farrar
Curtis Farrar
Assistant Administrator
for Technical Assistance

Jan 2 77

ENVIRONMENTAL THRESHOLD DECISION

TO: AA/TA, Mr. Curtis Farrar

THRU: TA/PPU ^{rum}

FROM: TA/AGR, Leon Hesser *LH*

SUBJECT: Environmental Threshold Decision

Project Title: Feed Information Systems

Project #: 931-0050

Project Manager: Dr. N. Raun

REFERENCE: Initial Environmental Examination (IEE) contained in
dated _____

On the basis of the Initial Environmental/Examination (IEE) referenced above and attached to this memorandum I recommend that you make the following decision.

XX 1. The proposed agency action is not a major Federal action which will have a significant effect on the human environment.

_____ 2. The proposed agency action is a major Federal action which will have a significant effect on the human environment, and:

_____ a. An Environmental Assessment is required; or

_____ b. An Environmental Impact Statement is required.

The cost of and schedule for this requirement is fully described in the referenced document.

_____ 3. Our environmental examination is not complete. We will submit the analysis no later than _____ with our recommendation or an environmental threshold decision.

Approved: *M. Belcher for C. Farrar*

Disapproved: _____

Date: Sept 2 77

Initial Environmental Examination

Project Location : Logan, Utah
Project Title : Feed Information Systems
Funding : FY 1977 \$260,000 for two years, FY 1979 \$125,000
Life of Project : 1975 to 1980
IEE Prepared by : Dr. Ned Raun, TA/AGR/L - August 1977
Kenneth P. Brundage, TA/AGR

Environmental Action Recommended: That the project has no significant effect on human environment.

Concurrence: [?]

TA/AGR, LHesser *LHesser*

Contents of Initial Environmental Examination

1. The attached Impact Identification and Evaluation Forms have been rated in terms of project activities. Two items have potential favorable influences and no items are detrimental to human environment. The items are:

A.5. Expand use of nutritive forages. This project assembles data on the nutritive composition of feed and forages available to livestock growers in LDCs and other world areas. Results will indicate which plant crops are more nutritious as animal feed sources. Then production of these desirable crops can be stimulated. Frequently this will involve leguminous species that utilize atmospheric nitrogen in their growth process.

F.3. Changes in cultural patterns. Improved general knowledge on animal feed sources, requirements, and practices can lead to more logical and productive practices in livestock husbandry. To have these results widely applied will involve cultural changes in the existing cultural patterns of LDC livestock raisers.

August 31, 1977

IMPACT IDENTIFICATION AND EVALUATION FORM

931-0050 Feed Information Svstems

Impact
Identification
and
Evaluation 2/

Impact Areas and Sub-areas 1/

A. LAND USE

1. Changing the character of the land through:

- a. Increasing the population ----- N
- b. Extracting natural resources ----- N
- c. Land clearing ----- N
- d. Changing soil character ----- N

2. Altering natural defenses ----- N

3. Foreclosing important uses ----- N

4. Jeopardizing man or his works ----- N

5. Other factors

Expand use of nutritive forages ----- M

B. WATER QUALITY

1. Physical state of water ----- N

2. Chemical and biological states ----- N

3. Ecological balance ----- N

4. Other factors

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
 L - Little environmental impact
 M - Moderate environmental impact
 H - High environmental impact
 U - Unknown environmental impact

C. ATMOSPHERIC

- 1. Air additives ----- N
- 2. Air pollution ----- N
- 3. Noise pollution ----- N
- 4. Other factors
- _____
- _____

D. NATURAL RESOURCES

- 1. Diversion, altered use of water ----- N
- 2. Irreversible, inefficient commitments ----- N
- 3. Other factors
- _____
- _____

E. CULTURAL

- 1. Altering physical symbols ----- N
- 2. Dilution of cultural traditions ----- N
- 3. Other factors
- _____
- _____

F. SOCIOECONOMIC

- 1. Changes in economic/employment patterns ----- N
- 2. Changes in population ----- N
- 3. Changes in cultural patterns ----- L
- 4. Other factors
- _____
- _____

G. HEALTH

- 1. Changing a natural environment ----- N
- 2. Eliminating an ecosystem element ----- N
- 3. Other factors
- _____
- _____

H. GENERAL

- 1. International impacts - ----- N
- 2. Controversial impacts ----- N
- 3. Larger program impacts ----- L
- 4. Other factors
- _____
- _____

I. OTHER POSSIBLE IMPACTS (not listed above)

See attached Discussion of Impacts.