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UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

NEW DELHI, INDIA

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Mr. John R. Wingard
CLUSA/India
805 Chiranjiv Tower
43 Nehru Place
New Delhi-110 019

Subject: NDDB/CLUSA Initial Technical Assistance
OPG (Grant No.AID-386-2144) - End of
Grant Report

Dear John:

Please refer to Para E of the subject report and submit to us a statement on final grant expenditures at your earliest convenience.

Thanks for your cooperation.

Sincerely yours,

Christine

Christine Adamczyk
Chief (Acting)
Office of Food for Development

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NDDB/CLUSA INITIAL TECHNICAL ASSISTANCE OPG GRANT NO. AID-386-2144

END OF GRANT REPORT

The Cooperative League of the U.S.A. (CLUSA) provided technical assistance as requested by the National Dairy Development Board (NDDB) for the PL 480 Title II - financed Oilseed Growers' Cooperative Project (OGCP) utilizing an Operational Program Grant (OPG) from the U.S. Agency for International Development (USAID). The purpose of the grant was to enable CLUSA to provide for expatriate participation in Operations Research Studies to help define OGCP strategies, problems and solutions; NDDB and Federation officers' familiarization and study tours to expose project personnel to modern oilseed production, processing and marketing methods; In-Service training in the United States for key NDDB and Federation staff to develop technical and management skills necessary to efficient and economical operations; and expatriate technical consultations in support of on-going production, processing and marketing operations.

A. SUMMARY:

An Operational Program Grant (Grant No.386-2144) in the amount of $374,800 was used to fund CLUSA's initial technical assistance for the start-up and initial implementation of NDDB's Oilseed Grower's Cooperative Project (OGCP).

The specific objectives of this Operational Program Grant (OPG) were to provide: a. initial technical support to NDDB to help ensure a successful and rapid establishment of the OGCP by taking advantage of the experience and technology of the well advanced U.S. cooperatives; and b. initial monitoring cost of the PL 480 Title II vegetable oil for the OGCP.

To achieve the above objectives, the following activities were to be carried out by CLUSA with funds provided by this grant:

1. Authorize the Resident Representative of CLUSA to act as overall coordinator of the grant activities, including orientation and supervision of U.S. consultants.

2. Arrange and provide for an observation and in-service study tour to the U.S. by a team of top level NDDB/OVOW and/or other officials of State Oilseed Growers' Federations or other organizations formed in

connection with the NDDB Oilseed Growers' Cooperative Project. The six week tour would allow them to become familiar with U.S. cooperative operations and practices, finalize requirements and qualifications for consultants, and to discuss the program with CLUSA's Advisory Committee members.

3. Arrange to provide four expatriate consultants with cooperative background in areas of marketing, general management and economics, technology and oilseed production to participate in an Operations Research Study.

4. Provide in-service training to five key officials of NDDB/OVOW with suitable background (e.g. Marketing, Engineering) in pertinent U.S. cooperatives for an average duration of 2 months.

5. Provide at least 15 person-months of short-term expatriate consultation or study on special subjects, such as agronomic research, oilseed storage, processing, grading, handling and product development.

6. Arrange for CLUSA's Standing Advisory Committee on Oilseeds to participate by consulting on the Operations Research Study, team visit, consultant selection, in-service training, project evaluation and planning.

7. Provide necessary communication equipment and supplies from the U.S. to support project activities.

8. A maximum of six months of CLUSA monitoring of PL 480 TITLE II commodities and the project will be financed under this OPG. At the end of this initial six months period, NDDB will provide to CLUSA an amount equivalent to the amount of dollars expended by CLUSA from the OPG funds during that period on monitoring activity. CLUSA will use these funds to fully finance the activities other than monitoring envisaged in its grant proposal.

The grant was executed on August 17, 1979 and was originally intended to terminate on August 16, 1982. However, through a series of amendments it was extended to cover a period of six years and a month, ending on September 30, 1985. The grant period extension was necessary due to problems in the initial development of the OGCP and in obtaining timely Government of India clearance for some of the grant activities.

The following table shows the target and actual input for each of the planned activities:

ACTIVITY	PLANNED INPUT	ACTUAL INPUT	DATE COMPLETED
1. Operations Research Study	4 consultants 12 person-months	5 consultants 7.5 person-months	March 1980
2. Familiarization Tour	3 Officials 6 weeks	3 Officials 6 weeks	July 1981

3. Short-term consultants	15 person-months (converted to one longer term)	15 person-months	May 1983
4. In-Service Training	5 key officers 2 months each	(a) 6 Officers- 6 weeks each	March 1984
		(b) 1 Officer- 2 months	March 1984
		(c) 5 Officers- 6 months	November 1985
5. Standing Advisory committee	10 Member Committee to consult on project planning, consultant selection, training program, evaluations, etc.	10 Member committee participated in consultant selection and training program	September 1985
6. Equipment and Supplies	$ 6,300	$ 675.13	

B. ACHIEVEMENTS AGAINST SPECIFIC ACTIVITIES PLANNED

1. CLUSA RESIDENT REPRESENTATIVE AS OVERALL COORDINATOR

Objective: CLUSA will authorize its Resident Representative in India to act as the overall coordinator in the implementation of this grant, including orientation and supervision of U.S. consultants that may be assigned to the project.

Status: Complete

Comments: The CLUSA Representative in India was authorized to and did act as the overall coordinator for the implementation of the grant throughout the entire grant period. This coordination included providing orientation and supervision to the expatriate consultants employed under the grant, orientation to the Indian study tour and training participants, and general administration of the grant activities and resources.

2. OPERATIONS RESEARCH

Objective: CLUSA would arrange to provide four expatriate consultants with cooperative background in the areas of marketing, general management and economics, technology, and oilseed production, to participate in an Operations Research Study. This study would set the initial complete development pattern for the Oilseed Grower's Cooperative Project and cover such areas as: use of one aspect of product marketing to provide year-round employment for rural women; the feasibility of village-level preliminary processing for local oil supply; the agronomic research center locations and detailed programs; basic collection and marketing patterns; and potential process and product development areas to be explored. The team for the study would be comprised of NDDB/OVOW personnel, outside Indian consultants, and 4 expatriate consultants over a period of approximately 3 months. NDDB will be responsible fo the management of this study.

Status: Complete

Comments: Although the initial Operations Research Study did not produce a complete draft development pattern for the OGCP, it was beneficial in identifying critical issues that had to be resolved and indicating promising project implementation options. It provided details for initial project operations in two districts of Saurashtra, Gujarat, as well as frameworks for a Continuing Information System and the evaluation of implementation plans for other project areas.

While NDDB had initiated the organization of the Operations Research Study at least a year before the arrival of the expatriate consultants, indications are that these consultants may have arrived prematurely. As NDDB's Oilseed and Vegetable Oil Wing (OVOW) was still in its formative stages, OVOW may not have been ready to make the best use of the expatriate consultants. Also, it would have been useful if the consultants could have returned for follow-up visits.

In addition to the four OR Study consultants initially provided, it was planned to provide consultancies on Financial Planning and Management and on Specialized Products later in the grant period. However, consultant scheduling problems and delays in clearances from the Government of India precluded these additional consultancies.

The following information details the expatriate consultant inputs provided, major recommendations made by these consultants and the action taken by NDDB on these recommendations:

<u>Consultant Inputs</u>

a. Mr. Noel Myers	Engineering study of the oilseeds processing industry in India	8.5 wk

b. Dr. Sydney Cantor	Product development program for the modernisation of the oilseeds and vegetable oil sector in India	7.5 wk
c. Booker Agr. Inter. Ltd. U.K. Dr. C.M. Pang Mr. T.G. Haworth	Long term strategy for the use of NDDB funds designated to develop complete oilseeds production, processing and marketing system	9.5 wk
d. Dr. Frank McGill	Oilseed production technology for the OGCP in Gujarat	4.9 wk
e. Dr. J. Jernigan	Farmers' services for the OGCP in Gujarat	4.0 wk

With USAID approval, Booker Agricultural International Ltd. of the U.K. was selected as one O.R. consultant. It was necessary to use this firm because no U.S. concern could take the assignment within the budgeted amount and no U.S. individuals were availble in the time required for this highly specialized job.

CONSULTANT RECOMMENDATIONS AND ACTION TAKEN

A. Oilseed Processing:

Recommendation 1: Any new plant facility or addition to present oilseed plant facility should be fitted with sufficient oilseed storage to enable the processing plant facility to operate 300 days per year.

Action Taken: Most oilseed processing plants in India have limited or no oilseed storage capacity and operate for a maximum of 150 days per year. The limited storage capacity which is available at these plants is for oilseeds in bags, not in bulk. Under the OGCP, innovative large capacity bulk oilseed storage facilities are being provided at the newly constructed and renovated existing processing plants. As on December 31, 1985, project owned and financed processing facilities had 90,5000 mt of oilseed storage capacity. The storage capacity at the processing plants together with planned additional capacity at the society level is intended to permit the project processing plants to operate 300 days per year.

Recommendation 2: Although the OR Study will be carried out to finality, it appears from an engineering study at this point that plants in the range of 400 mt/day to 725 mt/day should be constructed.

Action Taken: The majority of oilseed crushing plants in India have capacities of 50 mt/day or less. In order to take advantage of the

significant economies of scale available, the processing facilities being constructed and renovated under the OGCP have relatively large capacities: Junagadh -400 mt/day of groundnuts; Ujjain - 400 mt/day of soybeans; Bhavnagar - 300 mt/day of groundnuts; Tamil Nadu - 250 mt/day of groundnuts plus 50 mt/day of sunflower; Andhra Pradesh - two plants of 200 mt/day of groundnuts each; Karnataka - 200 mt/day of groundnuts plus 100 mt/day of sunflower; etc. The capacity of each facility has been established after careful consideration of the production and logistical constraints and the plant economics.

Recommendation 3: Introduce new and up-to-date oilseed processing technology into India.

Action Taken: The oilseed processing consultant funded under this grant, Mr. Carl Petersen, worked with the project processing plants and Indian equipment manufacturers to update the expeller and solvent extraction technology utilized at project facilities. In doing so, substantial capacity increases were achieved with nominal investment. For the project's Ujjain soybean processing plant, modern preparation equipment is being imported. Indian equipment manufacturers have also been updating the technology of their processing equipment through collaborations with foreign manufacturing firms.

B. New Product Development:

Recommendation 1: A dal-like product, because of its basic identity and wide spread use in the Indian diet, should be developed. A product development program should be undertaken for converting high-grade defatted groundnut flour to a dal analogue. To get as fast a start as possible on the dal project, advantage should be taken of already existing groundnut extrusion and related formulation experience in both India and the U.S.A.

Action Taken: A substantial amount of dal analogue development work has been undertaken by NDDB involving both defatted groundnut flour and partially defatted soybean. Although this work is continuing, a major constraint has been the lack of sufficient foreign exchange to take advantage of the extrusion and formulation experience available in the U.S. at such institutions as Texas A&M University.

Recommendation 2: NDDB should concentrate on marketing-oriented product development programs. The programs should be most pragmatic and occupied principally with reduction of products and processes to commercial practice.

Action Taken: As has been the case for its programs in the dairy sector, NDDB's product and process development programs in the oilseed sector are driven by a market-oriented philosophy. Applied research efforts are devoted to those products and processes which offer the most promise of commerical success. Among the development programs undertaken for the OGCP are: partially defatted groundnut and soybean

products; blended oil products; dal analogue products; vegetable oil margarines and butter/margarine blends; recovery of oil refining by-products such as lecithin; utilization of oilseed processing by-products such as groundnut shells for energy generation and building materials; extrusion of cottonseed for direct solvent extraction; mustard/rapeseed cracking equipment to increase expeller oil recovery; plastic pouch and other vegetable oil packing; pneumatic conveying sytems for use in oilseed processing plants; and solar drying of oilseeds.

Recommendation 3: It appears that soya oil acceptability will be enhanced if the donated oil is blended with raw groundnut oil. Indian government regulations however, do not allow such blending. A program for monitoring blends and their distribution requires immediate action.

Action Taken: NDDB testing of vegetable oils in urban and rural markets revealed significant evidence of wide-scale, illegal blending. Development of various blends of edible oils and consumer acceptability tests for these blends were conducted by NDDB. After several years of effort, NDDB has been successful in obtaining government approval for the controlled production and marketing of blended oils.

C. Oilseed Production Technology and Farmers' Services:

Recommendation 1: The following improved practices should be emphasized in the program during the initial three years:

1. Planting improved varieties of pure seeds.
2. Treating seed with thiram or captan to control seedling diseases.
3. Increasing plant population per hectare by close spacing of plants.
4. Control of pests when they reach economical damaging levels.
5. Improved harvesting techniques to reduce loss of nuts in soil.

At the same time it would be valuable to establish demonstrations in each village which will include a package of all recommended practices.

Action Taken: The recommended improved practices were all incorporated into the project's extension services. Project impact studies performed to date provide evidence that these practices have been effective and that average yields of members have been higher than those of non-members. Village/society-level demonstrations have also been an important part of the project's extension services. Through December 31, 1985, over 21,000 demonstrations had been conducted under the project.

Recommendation 2: An effective extension service should be organized

to promote and assist with adoption of advanced technology.

Action Taken: There are few, if any, programs in India which provide more intensive or effective extension services than those under the OGCP. The Training and Visit program, cited as the model for such efforts, provides less intensive coverage than that provided under the OGCP extension systems. In the CLUSA project area, 70 mobile teams have been deployed to provide extension services. More than 21,000 farmers have been trained representing more than 11 farmers per society and 11% of all farmers participating in the project. Over 19,000 mt of improved seed and 69,000 mt of fertilizer have been supplied to farmer members and the cooperatives are also supplying members with substantial quantities of seed treatment chemicals, insecticides, pesticides, fungicides, rhizobium, sprayers and dusters. Over 21,000 demonstrations of improved practices have been conducted under the project. Project impact studies conducted in Gujarat and Madhya Pradesh provide evidence that these extension services have led to members investing more, achieving higher productivity, and receiving higher net incomes than non-members.

Recommendation 3: Strong consideration should be given to an 80% cash upon delivery advance to peanut growers. Base prices should be announced each year after due consideration.

Action Taken: The project's State Cooperative Federations use two main systems for procurement of members' oilseeds. Under the pooling sytem, ownership of the groundnut remains with the members until it is processed and sold as finished products. About 90% of the purchase price is paid as an advance to the members and a final payment is made at the end of the year after the federation declares a final price based on the earnings from the sale of the finished products. Under this system, members receive the benefit of potential additional income due to their sharing of the margins earned on finished products.

Under the outright purchase system, members receive 100% payment for their oilseeds upon purchase by the cooperatives. A procurement price is announced each year by the Federations. This price is applicable to standard quality oilseeds and price discounts or premiums are paid for oilseeds deviating from the specified quality standards.

Recommendation 4: Critically evaluate the pros and cons of making a per cent oil determination on all lots upon delivery by growers before making a final decision.

Action Taken: NDDB had originally intended to determine the percentage oil content of oilseeds as part of the procuement system. However, in view of the consultant's recommendation that this should be critically reviewed as it may not be cost effective, NDDB deferred inclusion of the oil content determination until improved determination methods and economics could be properly investigated. To date, oil content determinations have not been used by the project as a parameter for

procurement price.

Recommendation 5: The aflatoxin problem must receive additional emphasis above that currently employed regardless of whether groundnuts are utilized domestically or exported.

Action Taken: The project has placed additional emphasis on the aflatoxin problem including the U.S. In-Service Training of an NDDB official on mycotixin analysis and control, which was funded under this grant, and development work on a cost-effective detoxification process to reduce aflatoxin to safe levels.

3. IN-SERVICE TRAINING

Objective: Provide In-Service Training for 5 key officials of NDDB/OVOW and the Federations with suitable background (e.g. marketing engineering) in pertinent U.S. cooperatives for an average duration of 2 months.

Status: Complete

Comments: In-Service Training was provided to a total of 12 NDDB/OVOW and Federation officers.

In the first batch, a total of six NDDB/OVOW and Federation officials were provided with In-Service Training for a total of 9 man-months. They were in the U.S. from February 5, 1984 to March 21, 1984. The participants included:

1. Mr. N. Vishvanathan - B.Tech (Chem) - Senior Project Engineer, NDDB Regional Office Bangalore, Karnataka;

2. Mr. P.P. Kotari - B.E. (Mech) - Project Engineer, NDDB, Anand, Gujarat;

3. Mr. S. Samal - B.Sc. Tech (Oil Tech) - Deputy Manager (Plants), Andhra Pradesh Federation, Hyderabad, Andhra Pradesh,

4. Mr. T.S. Trivedi - B.Sc./B.Sc. Tech (Food Tech) - Assistant Executive Officer, BVP, Bhavnagar, Gujarat;

5. Mr. M. Choudhary - B.E. (Hons.) Chem/Mgmt IRMA - Manager Projects, Madhya Pradesh Oilseeds Growers Federation, Madhya Pradesh; and

6. Mr. R. Kumar Rauvari - B. Tech. (Hons.) Ag. Eng./Mgmt IRMA - Assistant Manager Projects, Orissa Oilseed Growers Federation, Bhubaneswar, Orissa.

Objectives of the training were: a) to familiarize participants with methods employed in the U.S. for processing the 4 major oilseeds grown and being processed in India - groundnuts, cottonseed, soybean and

rape/mustard seed; b) to provide each participant with a thorough knowledge of proper operational conditions for each piece of equipment used in the processing of the various seeds listed above; c) to expose participants to other processes, not currently employed in India, that would be beneficial for efficient operations of an oilseed processing complex in India, d) to provide information on the infrastructure and business methods of the U.S. cooperative processors, and e) to provide information, data and methods for the proper storage of agriculture commodities in order to reduce product degradation.

This first group of participants received training as per the following schedule:

Location	Subject	Dates
CLUSA/Washington, D.C.	Briefing	February 5 to 8, 1984
Seabrook Inc., Edenton, N.C.	Partially Deffated Peanuts	February 9, 1984
Goldkist, Valdosta, Georgia	Soy Processing	February 10 to 11, 1984
SCM Chemicals, Brunswick Georgia	Hydrogen Generation	February 12 to 13, 1984
USDA National Peanut Research Laboratory, Dawson, Georgia	Peanut cultivation, handling, storage	February 14, 1984
Dixon Lumber Co., Eufaula, Alabama	Co-Generation	February 15, 1984
Goldkist, Graceville, Florida	Peanut Processing	February 16 to 18, 1984
Howe Baker, Tyler, Texas	Hydrogen Generation	February 19 to 20, 1984
Producers Cooperative Oil Mill, Oklahoma City, Oklahoma	Cottonseed Processing	February 21 to 25, 1984
Holsum Foods, Albert Lea, Minnesota	Margarine/ Shortening Production	February 26 to 28, 1984
Boone Valley Dawson Mills, Dawson, Minnesota	Soybean Processing	February 29 to March 12, 1984
CSP Foods Ltd., Atlanta, Canada	Rapeseed Processing	March 13 to 14, 1984

Honeymead Products Co. Mankato, Minnesota	Soybean Processing	March 15, 1984
Crown Iron Company Minneapolis, Minnesota	Oiseed Processing Equipment	March 16, 1984
CLUSA Washington, D.C.	De-Briefing	March 17 to 19, 1984

Observations and suggestions made by this first group of participants included the following:

Observation/Suggestion 1: Various processing equipment used in the U.S.A. are not available in India. It was observed that use of such equipment helps to achieve better quality products and efficient operations. Such equipment includes destoners, gravity tables, electronic sorters, cracking machines and flaking machines. It is suggested that the import of such equipment or development of indigenous suppliers be explored.

Action Taken: Due to high custom duties and import restrictions to protect indigenous manufacturers, it is generally not feasible to import the types of equipment noted. However, the operational experience gained with the equipment used in the U.S.A. enabled the participants and their organizations to promote improvements in the indigenous equipment to increase efficiency and achieve better quality products.

Observation/Suggestion 2: Although the Howe Baker hydrogen plants use a very efficient process, their imported cost would be approximately three times more than the electrolytic cell plants available in India. Cost reductions due to indigenous manufacture of some of the components should be explored.

Action Taken: The purchase of Howe Baker hydrogen plants had been under consideration. Based on the participants' observations and subsequent analysis, it was determined that the additional cost of the Howe Baker plants was prohibitive and indigenous electrolytic cell plants should be used for the project's vanaspati units.

Observation/Suggestion 3: It would be worthwhile if partially defatted peanut technology could be imported from Seabrook Blanching Corporation so that new products could be developed.

Action Taken: Considerable efforts were made to establish a collaboration with Seabrook Blanching Corporation. A 100 kg sample of Indian groundnuts was sent to Seabrook for processing and flavouring with Indian spices and then the resultant products were tested for consumer acceptability by NDDB. Ultimately, the efforts to establish a collaboration were unsuccessful due to the death of Mr. James

Gardiner, President of Seabrook and a strong proponent of the collaboration, and subsequent financial difficulties of Seabrook.

Observation/Suggestion 4: It is suggested for future In-Service Training in oilseed processing that the number of participants be limited to 4 and that the training be conducted at a limited number of selected plants consistent with the responsibilities of the participants.

Action Taken: No further In-Service Training in oilseed processing was conducted under the grant. However, this suggestion has been shared with CLUSA headquarters and should be taken into consideration for any future training programs of a similar nature.

A report on the In-Service Training of these 6 participants was submitted to USAID along with CLUSA's letter of November 23, 1984.

From January 10 to February 29, 1984, Mr. T.N. Murthi of NDDB's Applied Research and Development Division was provided with In-Service Training in mycotoxin analysis and control in the U.S.A. His training program included aflatoxin and other mycotoxin analytical methods and equipment; detoxification of aflatoxin on both an industrial and individual farm scale; storage and sampling methods for cottonseed and peanuts; pesticide analysis; and regulations pertaining to aflatoxin. Institutes providing training to Mr. Murthi included the University of Georgia, the National Peanut Research Laboratory and the University of Arizona. His training was directly related to his work at NDDB on aflatoxin analysis and control.

The final In-Service Training was conducted in 1985. Participants and subject areas included:

Mr. Ellur Sreenivas - M.Sc. (Ag.) - Assistant Executive, OVOW, Anand, Gujarat
Seed production technology - 1 month

Dr. M.L. Jhala - M.A., Ph.D. - Senior Project Executive, OVOW, Anand, Gujarat
Crop and other related forecasts and their use in oilseed/edible oil business operations - 1 month

Mr. P.K. Ghosh - M.Sc. - Project Executive, OVOW, Anand, Gujarat
Crop and other related forecasts and their use in oilseed/edible oil business operations - 1 month

Mr. Anil Sharma - M.Sc. (Ag.) - Agronomist, Area Agronomic Center Oilseeds Growers Federation, Bhopal, M.P.
Soybean production - 1 month

Mr. V.N. Rao - B.E. (Chem) - Senior Project Engineer, OVOW, Anand, Gujarat
Seed processing plants, margarine and peanut butter production technology - 2 months

The training program for Mr. Ellur Sreenivas was conducted by North Carolina State University and included the following subjects: peanut breeding and production; seed production and processing technology; breeding and varietal testing and developing; standards and procedures for seed certification; seed handling and storage equipment; cooperative handling, processing and grading procedures; and soybean production practices.

Sites used for Mr. Ellur Sreenivas' training included the following:

Crop Science Department, N.C. State University, Raleigh, North Carolina	September 23, 1985
Processing plant, A B Milling Raleigh, North Carolina	September 24, 1985
White Hat Seed Farms, Raleigh North Carolina	September 25, 1985
Soybean Research Program N.C. State University Raleigh, North Carolina	September 26 to 27, 1985
Peanut Belt Research Station N.C. State University, Raleigh, North Carolina	September 30 to October 2, 2985
Peanut Farmers Cooperative Virginia-Carolina	October 3, 1985
N.C. Foundation Seed Producers	October 4, 1985
North Carolina Peanut Growers Assn., Rocky Mount	October 7 to 14, 1985
Seed Testing Laboratory, N.C. Department of Agriculture	October 15 to 19, 1985
Washington, D.C.	October 20, 1985

In his report, Mr. Ellur Sreenivas indicated that the training he had received "enabled me to know the various management techniques and the inputs used for producing a reasonably good crop/good yields of commercial as well as seed crop of good quality." He also indicated specific technologies being used in the U.S.A. for commercial and seed production of soybeans and peanuts which could be tried under Indian conditions, with suitable modifications where necessary.

The training program for Dr. M.L. Jhala and Mr. P.K. Ghosh was prepared in consultation with Mr. Maurice Landes of USDA and included the following subjects: supply and demand forecasting; computerized forecasting models; survey and estimation procedures for crop areas and yields; market analysis procedures; and business use of crop forecasts and forecasting models.

The training sites used for Dr. Jhala and Mr. Ghosh included:

Economic Research Service USDA, Washington, D.C.	July 8 to 9, 1985
CLUSA, Washington, D.C.	July 10, 1985
Statistical Reporting Services USDA, Washington, D.C.	July 11 to 12
Sparks Commodities Inc. Memphis, Tennese	July 15 to 16, 1985
University of Missouri, Dept. of Agricultural Economics, Centre for National Ag. Policy	July 18 to 19, 1985
West Central Cooperative Boone, Iowa	July 22, 1985
Centre for Agricultural and Rural Development, Dept. of Agricultural Economics, Iowa State University	July 23 to 24, 1985
Iowa State Statistical Office, Statistical Report Services USDA, Des Moines	July 25 to 26
Dean Witter, Reynolds Inc. Chicago and Chicago Board of Trade	July 29 to 30, 1985
Bureau of Census, Suitland Parkway and Silver Hill Drive, Suitland, Maryland	July 31, 1985
CLUSA, Washington D.C.	August 2, 1985

As a result of their training, Dr. Jhala and Mr. Ghosh made the following major recommendation:

Recommendation: A crop survey and forecasting system should be established in the major project areas.

Action Taken: NDDB/OVOW has designed a crop survey and forecasting

system as a result of this recommendation. This system will be tested during Kharif 1986.

The training program for Mr. Anil Sharma was designed primarily by the University of Illinois/INTSOY and Iowa State University. The topics covered by the training included: soybean genetics and breeding; testing of seed health, purity, germination and viability; diseases of soybeans and control measures; current research in breeding and varietal selection; soybean production technology; varietal trials methodology; research farm management procedures and techniques; soybean processing techniques and food products; design and implementation of soybean extension programs; seed processing and grading; production technology for sunflower seed; soil testing procedures and equipment; foundation and certified seed production and processing.

The training sites visited by Mr. Anil Sharma included:

Agricultural Research Station, USDA Beltsville, MD	June 27 to 28, 1985
CLUSA/Washington, D.C.	June 29 to July 1, 1985
University of Illinois, Urbana, Champaign	July 2 to 7, 1985
Iowa State University, Ames, Iowa	July 8 to 9, 1985
Pioneer Overseas Corporation	July 10, 1985
Southern Illinois University	July 11 to 12, 1985
University of Illinois, Urbana, Champaign	July 13 to 16, 1985
Illinois Crop Improvement Association, Inc., Illinois	July 17, 1985
University of Illinois, Urbana Champaign	July 18 to 22, 1985
Bureau of Laboratories, Springfield Illinois	July 23, 1985
Stults Scientific Engineering Company, Springfield, Illinois	July 23, 1985
Funk Seeds International, Bloomington, Illinois	July 24, 1985
Illinois Crop Improvement Association Urbana, Illinois	July 24, 1985
Illinois Foundation Seeds, Inc.	July 24, 1985

Tolono, Illinois

University of Illinois Library Urbana, Illinois	July 25, 1985
Eli Lilly Center, Indianapolis, Indiana	July 26, 1985
CLUSA/Washington, D.C.	July 27 to 29, 1985

The Training program for Mr. V.N. Rao was designed by the participating training institutions and covered the following subject areas: manufacture of margarine, margarine spreads, and butter/margarine combinations including formulations and quality control aspects; manufacture of peanut butter; seed production, processing, handling, storage, testing and certification for soybeans, peanuts and cottonseed; and co-generation systems fueled by agricultural wastes.

Training sites visited by Mr. Rao included:

Agricultural Research Station, Beltsville, MD	September 24, 1985
Miami Margarine, Cincinatti, Ohio	Sept. 25 to Sept. 30, 1985
N.C. State University, Raleigh, North Carolina	October 1 to 11, 1985
Dixon Lumber, Eufaula, Alabama	October 12 to 14, 1985
Home Brands, Minneapolis, Minnesota	October 15 to 16, 1985
Land O'Lakes, Minneapolis, Minnesota	October 17 to 27, 1985

4. FAMILIARIZATION/STUDY TOURS

Objective: CLUSA will arrange and provide for an observation and in-service study tour to the U.S. by a team of 3 top level officials of the NDDB/OVOW for approximately 6 weeks in order to: become familiar with U.S. cooperative operations and practices; finalize the requirements and qualifications for consultants; and discuss the program with CLUSA Advisory Committee members. CLUSA may authorize its Resident Representative in India to participate in the final phase of these discussions in Washington D.C.

Status: Complete

Comments: A team consisting of two senior staff members of NDDB/OVOW

and the plant manager of GCOGF participated in the program organised by CLUSA from May 18 to July 3, 1981. The following NDDB and GCOGF personnel spent a total of 4 man-months in the U.S.A.

Mr. Shailendra Kumar - Acting Director, OVOW/NDDB

Mr. N. R. Singal - Project Engineer, OVOW/NDDB

Mr. K. R. Rao - Chief Engineer, GCOGF

The familiarization/study tour addressed a variety of subjects including: transport, storage and processing of peanuts, soybeans and cottonseed; oilseed preparation, expeller and solvent extraction equipment and operations; vegetable oil refining and packaging equipment and practices; speciality products including margarine and partially defatted peanuts; and cooperative oilseed processing operations and practices. Institutions visited in the U.S.A. included Land-O-Lakes, Gold Kist, Rice Land Foods, Session Oil Mills, Seabrook Blanching Corporation, EMI Corporation, Carter Manufacturing Co. and the National Peanut Research Laboratory.

Important recommendations made by the team, and the subsequent action taken, included the following:

Recommendation 1: The storage facilities at the central and satellite processing plants should be of "Muskogee" type, in the range of 10,000 to 15,000 mt each.

Action Taken: The project has designed and constructed "Muskogee" type bulk oilseed storage facilities for its processing plants. Two 12,000 mt storage units have been constructed at the BVP plant, one 12,000 mt unit at the Jamnagar plant, and two 15,000 mt units at the Junagadh plant.

Recommendation 2: The recent technology of physical refining should be introduced into the OGCP plants along with facilities for conventional alkali refining.

Action Taken: Physical refining equipment along with alkali refining equipment have been incorporated into the appropriate OGCP oil refineries in order to maximize efficiency and flexibility.

Recommendation 3: At the project's soybean processing plant, facilities should be provided for the recovery of lecithin and edible soya flour.

Action Taken: The Ujjain soybean processing plant being constructed under the OGCP is being provided with the necessary equipment for recovery of lecithin and edible soya flour.

Recommendation 4: Instead of pre-pressing and extracting cottonseed, the oil from cottonseed should be extracted directly in the solvent extraction plants.

Action Taken: The OGCP-financed cottonseed processing plant at Idar utilizes the direct solvent extraction and miscella refining process. It is one of the first units in India to do so.

Listed below are two additional activities which were not financed by the grant but which were organized with CLUSA assistance and were consistent with grant objectives:

a) In connection with the soybean processing facility to be constructed under the OGCP, the Managing Director of the M.P.Oiseeds Growers Federation, Mr. M.P. Rajan, and the Regional Director, NDDB, Bhopal, Mr. A.K. Banerjee, visited the U.S.A. during June 1982 to study U.S. soybean processing technology and management systems, marketing systems for soybean products, and related areas. This tour covered a period of two man-months and was financed by NDDB.

b) Principals of Ecotech, an Ahmedabad based technical consultancy firm, visited the U.S.A. (at their own expense) for inspection of U.S. processing facilities and discussions with U.S. equipment manufacturers. Ecotech had been retained by NDDB and GCOGF in connection with building new processing facilities.

5. SHORT-TERM CONSULTANCY

Objective: At least 15 additional person-months of short-term expatriate consultation or study tours on special subjects, such as agronomic research, oilseed storage, processing, grading, handling, and product development, would be arranged by CLUSA.

Status: Complete

Comments: Delays in completion of the Operations Research Study and the familiarization tour caused delays in determining how the funds provided for this activity would be used. NDDB felt the need for a consultant with broad experience in planning, development and operation of oilseeds processing plants and identified Carl Peterson for this assignment. Mr. Peterson was at that time working as advisor to NCDC under CLUSA's NCDC OPG and had, in that capacity, already provided some assistance to NDDB. NDDB initially requested Mr. Peterson's services for a nine-month period, substituting for several short-term consultant positions. This was later extended to 15 months, using all of the person-months proposed for this activity. Mr. Peterson is credited with significant contributions to planning, construction and operation of those plants. He also assisted in plant layout and selection of equipment for three new plants in Gujarat and

assisted in identifying equipment needs for a soybean plant in Madhya Pradesh and groundnut/rapeseed equipment for plants in Orissa and Tamil Nadu. His end of tour report was submitted to USAID vide CLUSA's letter of February 9, 1984.

Following are a few out of the many recommendations made by Mr. Carl Peterson:

Recommendation 1: Remove "reverse worms" from the expellers and reduce cage bar spacer thickness.

Action Taken: The "reverse worms" were removed initially from the expellers at the BVP and Jamnagar plants. As a result, expeller capacity increased by as much as 60% and power consumption was reduced by as much as 60% while residual oil levels in the cake remained about the same. Reduction of the cage bar spacer thickness decreased the amount of sediment in the expeller oil by 40 to 50%. Consequently, similar action has been/will be taken with regard to the expellers at other project plants.

Recommendation 2: Oilseed processing should be a continuous flow process. Mis-matched capacities between the preparation/expeller sections and solvent extraction section or intentional storage of partially-processed oilseeds leads to higher processing losses and finished product degradation.

Action Taken: The project's designs for new processing plants and renovations of acquired, existing plants strive for balanced capacities between the various sections and a continuous flow process.

Recommendation 3: Extractors in India are commonly operated at temperatures of 45° to 50°C. The operating temperature should be raised to 60-61°C.

Action Taken: Increased extractor operating temperatures have been used at the project's operational solvent extraction plants at Bhavnagar and Jamnagar with encouraging results. Raising the extractor operating temperature by 10-15° C reduces the extraction time required by 50 to 67% and thereby permits higher capacity operation.

Recommendation 4: Construct "Muskogee" type seedhouses for groundnut storage and cylindrical storage bins for soybean and rapeseed/mustard at the project processing plants and install bulk handling equipment.

Action Taken: "Muskogee" type seedhouses, which Mr. Petersen helped design, with appropriate bulk handling and aeration equipment have been constructed at the project's groundnut processing facilities at Bhavnagar, Jamnagar and Junagadh. Cylindrical storage silos with a capacity of 35,000 mt are under construction at the project's soybean processing plant in Ujjain. A silo storage system for rapeseed/mustard at the project's plant in Jagudan is under implementation.

6. STANDING ADVISORY COMMITTEE

Objective: CLUSA Advisory Committee on Oilseeds will participate by consulting on the Operations Research Study, team visit, and consultant selections as well as participating in the "in-service" training and project evaluation and planning.

Status: Partial

Comments: CLUSA appointed a Standing Advisory Committee of prominent U.S. cooperators to assist CLUSA in planning and implementing in-service training programs, and selection of consultants and to discuss project issues with key NDDB/OVOW officials visiting the U.S. cooperatives. The Committee consisted of 10 members, four of them were associated with oilseeds processing cooperatives and six were prominent individuals with experience in cooperative management who could advise on education and training. The Advisory Committee served without salary or fees. Members of the Committee were used extensively by CLUSA in arranging for site visits and training programs for the familiarization/study tour and In-Service Training.

7. COMMUNICATION EQUIPMENT AND SUPPLIES

Objective: CLUSA will also provide necessary communication equipment and supplies from the U.S.A. in support of the project activities.

Status: Partial

Comments: The OPG provided $6,300 initially for financing purchase of various items of audio-visual equipment, calculators, copy machines, etc., for use by CLUSA/NDDB in connection with the OGCP. CLUSA had initially intended to buy a USG surplus copier but due to a change in Government procedures between the time the proposal was written and the project initiated, it proved impractical to buy a U.S. made copier. NDDB subsequently provided a copier for CLUSA's use. NDDB also decided not to proceed with the planned purchase of audio-visual equipment due to custom duty complications. CLUSA bought two dictaphones and two desk printer/calculators for office use in connection with the project.

8. COMMODITY MONITORING

Objective: A maximum of six months of CLUSA monitoring of PL 480 Title II commodities and the project will be financed under this OPG. At the end of this initial six months period, NDDB will provide to

CLUSA an amount equivalent to the amount of dollars expended by CLUSA from the OPG funds during that period on monitoring activity. CLUSA will use these funds to fully finance the activities other than monitoring envisaged in its grant proposal.

Status: Deleted

Comments: Alternative financing was arranged by NDDB under the OGCP thereby eliminating the need for use of OPG funds for this activity.

C. END-OF-GRANT EVALUATION

The end-of-grant evaluation was conducted by Dr. Russell O. Olson, Ms. Christine Adamczyk and Mr. S.C. Mehta during September and October 1984. The purpose of the final evaluation, was to assess achievments against objectives and planned activities and their impact on the Oilseed Grower's Cooperative Project and to make recommendations regarding possible follow-on technical assistance programs for the OGCP.

The major findings of the evaluation are briefly summarized below:

The Grant was appropriately designed to support NDDB's Oilseed Grower's Cooperative Program. Implementation, while at a slower pace than planned, has been effective. This was to be a three year grant, to terminate in August, 1982. However, through a series of amendments it was extended to cover a period of 5 years and 4 months, ending on December 31, 1984. The need for extension was dictated by problems in development of the Oilseed Growen's Cooperative Project. The initial low level of activity in the OGCP made it appropriate to delay some components of the Grant.

One problem in implementation has been difficulty in obtaining Government of India clearances on time. This has resulted in problems in filling consultant positions and in planning training programs in the most effective way.

The following recommendations were made by the end-of-grant evaluation team:

1. Consultant services of the kind provided under the Grant will be needed for the many new oilseed processing plants yet to be commissioned. Consultants are needed who have operation/management experience to assist in planning, erection and operation of these plants over the next 2-3 years. USAID, CLUSA and NDDB should consider a follow-on Grant or other mechanism for providing such services for an additional 2-3 year period.

2. In providing consultant services under a new grant, it is

recommended that each consultancy be for short period of 3 to 6 weeks at a time but repeated, after appropriate intervals, by the same consultant to provide a continuity of services over a 2 to 3 year period.

3. Nominations for training in the United States for five NDDB key persons were submitted to the Ministry of Agriculture for clearance in October. If approved soon the group could depart before the end of 1984 but probably not complete the proposed training before the termination of the Grant. CLUSA should plan individual programs for each candidate and make provision for completion of their programs beyond the termination date of the Grant if necessary to meet training objectives. In case the nominees are not able to initiate their training before December 31, 1984, it is recommended that the Grant be extended so that this training can be accommodated. The nominees are key NDDB personnel and the proposed training can have an important impact on the success of the OGCP. An extension should be long enough to permit CLUSA to plan effective individual programs. For some of the candidates it would be appropriate to extend the training program into the soybean growing season. (Note: The grant period was subsequently extended upto September 30, 1985 and the subject In-Service Training was conducted.)

D. FUTURE ACTION/RECOMMENDATIONS

NDDB is in agreement with the end-of-grant evaluation report recommendation that a follow-up program of technical assistance would be useful and NDDB wishes to pursue initiation of such a program. It is our understanding that USAID is supportive of a follow-up program of technical assistance as evidenced by the Mission's suggestion that certain elements of such a program might be incorporated into the CLUSA Local Cost OPG (No.386-3024). However, an initial definition of the elements to be covered in a follow-up program suggests that the funding required would substantially exceed the funding potentially available from Grant No.386-3024. Consequently, it is currently planned that a separate proposal for the follow-up program of technical assistance will be developed and submitted to the Mission for consideration.

A preliminary definition of the areas to be addressed in a follow-up program has been devised in consultation with NDDB/OVOW. These areas include:

A) Oilseed Processing

1) Consultancies pertaining to:

(a) Processing plant operational improvements, preparation of operational and maintenance manuals, training of plant management personnel;
(b) Planning, erection and commissioning of new plants;
(c) Design of bulk storage and transportation systems;
(d) Development of closed-loop instrumentation systems to reduce

processing losses.

2) In-Service plant training for NDDB and Federation officers in the United States.

B) Applied Research and Development

1) Consultancies to assist in the development of new oilseed products and processes;

2) Research and Development work conducted outside of India;

3) Prototype equipment;

4) New technology required for project implementation.

C) Marketing

1) NDDB and Federation personnel travel and related costs for:
(a) Studying oilseed and oil trade practices outside of India;
(b) Study of the Chicago Board of Trade and brokerage firms dealing in oilseeds/oilseed products;
(c) Initiating contracts for development of cooperative trade links for oilseeds/oilseed products.

2) Services of a U.S. agency to provide information services on oilseeds/oilseed product markets, to initiate and develop contacts and trade links, and if required, to act as an agent or broker for export sales.

D) Manpower Development

1) Consultancies in the design and development of training programs and materials for processing and production enhancement activities;

2) NDDB and Federation personnel travel and related costs for participation in courses on advanced methods of extension and training;

3) Equipment required for production of training and audio-visual materials and aids.

E) Production Enhancement

1) Consultancies in the planning, design and commissioning of seed processing plants;

2) Consultancy in seed grading and testing;

3) Consultancy in the development, design and initiation of aflatoxin control systems.

F. Project Management

1) Consultancies in the development of computer-based:

(a) Project management model for engineering projects;
(b) Civil engineering design models; and
(c) Product, pricing and inventory maintenance models.

2) NDDB personnel travel and related costs for participation in advanced project management system training.

E. FINANCIAL STATEMENT

A statement on final grant expenditures will be submitted separately as soon as this information is available.

F. REQUESTS/RECOMMENDATIONS

CLUSA is grateful to USAID for providing the Grant and for its assistance in implementing the grant program. We would request USAID's continuing assistance in developing and finalizing a follow-up program of technical assistance.