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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
PL-480 Title II - CLUSA/NDDB Oilseed Growers' Co-operative Project; and CLUSA OPG 386-2144 for Technical Assistance to NDDB/OGCP.	386-0454	USAID/INDIA

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 84-2

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 79	A. Total $110,132,300	From (month/yr.) June 1979
B. Final Obligation Expected FY 83	B. U.S. $110,132,300	To (month/yr.) June 1983
C. Final Input Delivery FY 86		Date of Evaluation Review June 1983

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

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., cirgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
Mid-Term Project evaluation indicates substantial and potentially important accomplishments. Oilseed Growers' Co-operative Projects (OGCP) is a seven years vertically integrated project (1979-1986) aimed at bridging the gap of one million mts. between domestic edible oil production and consumption levels. It is financed from sales of Refined Soybean Oil provided under PL-480 Title II. Due to delay in receipt of initial consignments of oil and its monetisation, it will be premature to assess the major purpose of OGCP in establishing an integrated oilseeds and vegetable oil production, processing and marketing system within a cooperative structure controlled by farmers themselves. As it was only a mid-term evaluation of the First Phase, it is recommended that final evaluation be conducted in FY86 in order to more fully measure the impact of the project.	Harry H. Houck Chief, Office of Food for Development	FY1986

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☒ Other (Specify) CLUSA MYOP
- ☐ Other (Specify)

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☒ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

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

Harry H. Houck, Project Officer

John R. Westley, Mission Evaluation Officer

12. Mission/AID/W Office Director Approval

Signature

Typed Name Owen Cylke
Director

Date 4/16/84

AID 1330-18 (3-78)

CLUSA/BDDB: THE OILSEEDS GROWERS CO-OPERATIVE
PROJECT (OGCP) AND OPG 386-2144 TECHNICAL
ASSISTANCE TO NDDB/OGCP

Project Evaluation Summary (PES) - Part II

13. SUMMARY
See PP 1-4 after Page 219 of the Evaluation Report (attached) - Attachment 'A'

14. EVALUATION METHODOLOGY
See PP 7-10 of the Project Evaluation Report.

15. External Factors
Original MYOP had assumed that seven state Federations be organized simultaneously during 1979-80 and receive different forms of financing over the seven year LOP. This has not occurred, so project goal attainment through the third year of the project must be reassessed in terms of what has actually been achieved within constraints imposed by external factors like cooperation (or lack of) from state governments, misunderstandings between NDDB/OVOW, CLUSA and USAID over certain aspects of the project agreements, particularly over the jurisdiction of the AID Inspector General in India, and the effects of inclement weather. Due to delays in receipt of oil, sales proceeds required for financing the project activities did not become available till 1980-81. Misunderstanding on I.G.'s audit rights developed between NDDB/OVOW, CLUSA and USAID resulted in slowing down of expenditures on expansion activity. Preliminary difficulties in canvassing the state governments of Karnataka and Andhra Pradesh on the strong role of OVOW which have now been overcome also slowed down OGCP implementation. Added to these were the drought conditions in FY 82-83 which caused extensive reversals and damage to oilseeds production.

16. The Project
See PP 1-4 of the Project Evaluation Report.

17. Purpose of Evaluation
See PP 5-6 of the Evaluation Report.

18. Evaluation High Lights - An Overview
See PP 11-24 of the Project Evaluation Report.

19. Project Components
PP 25 - 167 of the Project Evaluation Report.

20. Financial Evaluation
PP 168 - 197 of the Project Evaluation Report.

21. Summary of Recommendations
PP 198-219 of the Project Evaluation Report

22. Special Comments/Remarks
The project has created a foundation for an ambitious and sophisticated integrated infrastructure of oilseeds and vegetable oil production, processing and marketing within a co-operative framework controlled by the farmers themselves. The OGCP was developed on the "Anand Pattern" under the expert guidance of the Oilseeds/Vegetable Oils Wing of NDDB. Considering the constraints under which the project initially passed through the mid-term evaluation team recommended that:

1. Life of project be extended by four years through 1989-90.

2. An additional 37,000 MTs of oil be committed to meet the budget deficit of Rs.48 crores (Dollars 48 million).

3. The OGCP Budget be reclassified under Developmental, Operational and Capital major purposes with flexibility accorded within each of these.

4. Strengthening of the financial planning, management and analysis capability of NDDB/OVOW/Federations.

5. Production enhancement be focussed on yield stabilization in rainfed areas.

6. Increasing the level of funding for procurement financing, with Phase down of project funds as state federations mature.

7. Elimination of buffer stocking policy.

8. Elimination of action item operational loss and adjustment of losses under respective action line items.

XD-AAP-219-A

REPORT ON THE EVALUATION OF THE OILSEED GROWERS' COOPERATIVE PROJECT

by

The Joint NDDB/CLUSA/GOI/USAID
Project Evaluation Team

June, 1983

ACKNOWLEDGEMENT

The evaluation team is deeply indebted to the many individuals who contributed to its understanding of the project and the preparation of this report. The staff of the Oilseeds and Vegetable Oil Wing (OVOW) of NDDB provided comprehensive, updated documentation on all aspects of the project. They responded graciously to requests for clarification of data and requests for additional information, and gave generously of their time including weekends.

The State Federations arranged well planned tour programs, permitting the team to examine their operations. They provided useful documentation on progress to date and plans for the future. Visits to village level societies enabled the team to enjoy the fine hospitality of the member growers and learn first hand how they perceived the development and operation of their cooperatives.

The team is grateful for the excellent cooperation of the secretarial staffs of NDDB/OVOW and USAID/Delhi in producing the draft and final copies of the report.

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I. INTRODUCTION

A. The Project

Demand for edible oils in India has far outstripped domestic production in recent years. More than one million metric tons of oil will be imported in 1982-83, yet this will barely maintain per capita consumption at fifty percent of what are considered nutritional requirements.

At the request of the Government of India, the National Dairy Development Board (NDDB) proposed a project to address the problem. The proposal, entitled "Restructuring Edible Oil and Oilseed Production and Marketing", was approved by the Government in September of 1978 and became the basis for the Oilseed Growers' Cooperative Project (OGCP) established under a memorandum of agreement between NDDB and the Cooperative League of the United States of America (CLUSA). The project is financed by rupee currency generated from commercial sales in India of soybean oil provided under the U.S. Food for Peace (PL 480 - title II) Program. The commodities are provided under a transfer authorization negotiated between the US Agency for International Development and CLUSA, based on the CLUSA-NDDB agreement and a multiyear operational plan prepared by CLUSA and USAID.

The purpose of the project is to establish an integrated oilseeds and vegetable oil production, processing and marketing system within a cooperative structure controlled by the farmers themselves.

The stated major objectives of the Project are:

(a) To coordinate the modernization of oilseeds production, oilseeds processing and marketing of vegetable oils and oilseed by-products in areas covered by the project.

(b) To procure and market imported and indigenously produced vegetable oils in such a way as will contribute to the stablization of supplies and prices at levels which will be fair to consumers and growers.

(c) To increase the opportunities for production and remunerative employment in the selected major oilseed growing areas.

(d) To generate the funds required for the establishment of a modernized oilseed and vegetable oil industry based on oilseed growers' cooperatives, which will put the functions of oilseeds processing and marketing into the producers' hands.

(e) To devise and implement a program of investment and development which will enable the growers to increase their oilseed production and their returns from oilseed production, while also increasing the efficiency of the processing and marketing functions, through the growers' own cooperative."

CLUSA, as cooperating sponsor, is responsible for procurement and transfer of the donated oil to NDDB, for monitoring how proceeds from the sale of the commodity are used and for reporting on progress of the project as an intermediary between NDDB and USAID.

NDDB is the overall project authority, with responsibility for management of the project. The "Anand Cooperative Pattern", which NDDB replicated successfully in developing the dairy industry under Operation Flood I and II, is, with some modification, the model employed in this project. NDDB has established an Oilseeds and Vegetable Oils Wing (OVOW) within NDDB to carry out the organisational and management responsibilities.

A fundamental feature of the "Anand Pattern" is that the cooperative structure is built up from the grass roots. NDDB/OVOW while exercising overall management control, initially, to ensure that project operations get underway in a technically and financially sound way, places major responsibility with the State Oilseeds Growers' Federations for organizing and strengthening the cooperative societies and for production improvement, procurement,

processing and marketing. NDDB/OVOW's primary function in the project is to organize and supervise the development of the institutional infrastructure required for the integrated cooperative system. Eventually each of the state federations will be included in a National Federation to be established by the end of the project. NDDB/OVOW's role will then be assumed by the National Federation and OVOW's staff would most likely form the core of the National Federation.

The Oilseeds Growers' Cooperative Project is designed as a seven year project (1979-86). It began operation in June 1979 with the arrival of the first shipment of soybean oil from the United States. It was initially intended to extend the coverage of the project to major oilseed growing areas of five states. Because of the keen interest of the Madhya Pradesh Government a major soybean producing area of that state has been included. The project now includes a total of eight production districts.* Four of these are in the Saurashtra region of Gujarat, one each is located in Madhya Pradesh, Tamil Nadu, Karnataka and Andhra Pradesh.**

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* Project district is defined as a contiguous area, not necessarily confined to one revenue district, having potential area under oilseed production of about 250,000 hectares.

** Three other districts, including North Gujarat, Orissa and Maharashtra are financed out of proceeds generated from sale of edible oil donated to NDDB by the Cooperative Union of Canada/CIDA.

B. Purpose of the Evaluation

The NDDB proposal on "Restructuring Oilseed and Edible Oil Production and Marketing" called for a joint evaluation of the project after completion of its initial phase (3 years from initiation). The stated purpose of the evaluation was to assess the progress of the project and to prepare detailed plans of future actions supportive of achieving project objectives. The initial CLUSA Multiyear Operation Plan (1978-85) states that such an evaluation "will be undertaken in the context of the Project Evaluation Summary format as outlined in Handbook 3 Section 5-1(2), in so far as it complements the evaluation methodology designed by CLUSA and that of NDDB/OVOW". The agreements specify that the evaluation be conducted jointly by NDDB, the Government of India, USAID and CLUSA.

The overall scope of the evaluation with which the evaluation team is charged is as follows:

1. Assessments of achievements against initial and revised objectives.
2. Analysis of the relationship of external factors and provision of inputs to the achievement/non achievement of objectives.
3. Analysis of prospective achievement of end-of-project objectives (outputs, purpose and goal) in relation to:
   (a) achievements as of end of Phase I;

(b) changes in external factors; and

(c) changes in initial project assumptions.

4. Analysis of direct and indirect impact of the project on immediate and other beneficiaries.

5. Identification and analysis of positive and negative unplanned effects on social structure, environment, health, technical or environmental elements.

6. Summary of lessons learned in relation to project implementation strategy and methods.

7. Assessment of project effectiveness, efficiency and economy using generally accepted accounting ratios and cost benefit analysis methods.

8. Recommendations related to Phase II, including:

   (a) Alteration of goals, purposes and output objectives as well as input requirements,

   (b) Modification of project strategy and methods.

   (c) Specific planning, management and technical issues identified.

   (d) Policy issues (internal and external).

   (e) Requirements for, and alterations of, governing agreements, including: NDDB-CLUSA Memorandum of Agreement, USAID-CLUSA Transfer Authorization and CLUSA Multiyear Operational Plan.

C. Evaluation Methodology

A multi-disciplinary team consisting of six experts recruited by CLUSA, one provided by the Government of India, Ministry of Agriculture and one provided by NDDB/OVOW constituted the evaluation team. The six team members recruited by CLUSA included the following disciplines: Agronomist (sub-tropical oilseed), Oilseed Processing Technologist, Oilseed/Oil Marketing Economist, Financial Management, Cooperation/Grower Services/Extension, and General Management.

Specific responsibilities for evaluation of various components of the project were allocated among the team members on the basis of individual skills and interests. While major responsibility was assumed by each team member for some components of the project, the inter-relationship among the components required considerable coordination and interaction among the team members.

The evaluation team assembled in Delhi on May 12 and 13th for a briefing by USAID, CLUSA and the Government of India and proceeded to Anand on May 15th. The NDDB/OVOW provided team members with documentation on the progress of the project up to March 1983, and briefed the team on the Anand pattern as it had evolved from the Kaira District Cooperative Milk Producers' Union established in 1946 to the establishment of NDDB and Operation Flood I and II. The team spent the next four days examining project activities in the

Saurashtra region of Gujarat. This included meetings with GROFED (the State Oilseeds Growers' Cooperative Federation), managers of the processing plants, members of primary oilseed growers cooperative societies, State Government officials and visits to project farms and State and National Research Institutions. The state federations provided detailed reports on accomplishments up to March 1983.

Following the tour of the project area in Gujarat, the team returned to Anand for two days. During this period additional information was obtained from NDDB and OVOW staff. More detailed planning of the evaluation process was started and reviewed with representatives of CLUSA and USAID.

The team spent three days in Madhya Pradesh, three days in Tamil Nadu, one day in Karnataka and two days in Andhra Pradesh meeting with State Federation officials and staff, State Government officials and, where possible, examining project facilities and activities in the field. Current reports were provided on project activities in Madhya Pradesh and Tamil Nadu by Federation officials. The States of Karnataka and Andhra Pradesh have made strong commitments to participation in the project but have not yet begun operation. In both States the team was advised that the State Federations would become operational within the next month.

Following the visits to state federations the team returned to Anand to draft the report. A briefing was held with Dr. Kurien and staff of the NDDB/OVOW on the draft report before leaving Anand on June 16th. The report was finalized and findings were presented to USAID and the Government of India during the week of June 20th.

Highlights of the evaluation findings are summarized in Chapter II. A more comprehensive discussion of each project component is included in Chapter III. This includes assessment of achievements up to this time (Phase I), problems and issues affecting project performance, prospects for achieving end of project goals and recommendations relative to the remaining year of the project. An evaluation of the financial aspects of the project is presented in Chapter IV.

It became clear early in the evaluation that, with time constraints and limitations of available data generated by the project, it would not be possible to completely satisfy all of the requirements of the scope of work. In particular, it seemed that very little could be said at this time regarding the impact of the project on immediate or secondary beneficiaries or the effects on social structure, the

environment, health, etc. The Team noted that grower membership of the cooperative societies was drawn from a cross section of the forming community, with participation of small farmers in about the same proportion as in the rural community. Therefore if, as we expect, there will be significant benefits to grower members the small farmers will share in those benefits.

The Management Information System (MIS), which will be an important feature of the project, is now being developed on a pilot basis in the Gujerat Federation and will be employed eventually throughout the project (see Section III B). This should be the principal instrument for generating information needed, not only for internal management decisions but, for assessing the economic and social impact of the project.

II. EVALUATION HIGHLIGHTS - AN OVERVIEW

The Oilseeds Growers' Cooperative Project is an imaginative and ambitious undertaking. It is basically well designed and, in general, is being well implemented. The Oilseeds and Vegetable Oil Wing of NDDB is staffed with talented and highly motivated personnel and the project gets strong support from the technical and service departments of NDDB.

Achievements during the first three year period of the project have fallen short of original (and revised) targets in areas like production enhancement, cooperative society membership and procurement. Nevertheless, the performance of the project has been impressive considering the problems that have affected it.

One of the issues which has impacted upon the measurement of project success is the starting date of the enterprise and the time frame involved. The original MYOP had assumed that seven state federations would begin simultaneously in 1979-80 and receive different forms of financing for seven years. This did not happen, so the project goals through the third year of the project must be assessed in terms of what has actually been achieved within the constraints imposed by external factors like state governments, USAID, natural calamities, etc.

Because of delays in receipt of the initial shipment of donated oils and further delay in the distribution and sale within India, funds generated for financing project activities did not become available until 1980-81. Fortunately, NDDB/OVOW had already done much of the preliminary planning as a pre-project investment to the formation of cooperative societies, and the organization and staffing of state federations in Gujarat and Madhya Pradesh proceeded rapidly during this time period.

The state governments of Karnataka and Andhra Pradesh had reservations at first about the strong role of OVOW in the project. They were concerned about the degree of independence the state federations would have from the state governments as exists within the Anand cooperative model. Only within the last few months have those two states taken the necessary steps to begin organizing the growers' cooperative societies and making their federations operational.

Misunderstandings developed early in the project between NDDB/OVOW, CLUSA and USAID over certain provisions of the project agreements. There has been a continuing argument, for example, regarding the jurisdiction of the US Inspector General in India. It is a question of whether auditors sponsored by the U.S. Government must review the financial records when chartered accountants within India are available. This is viewed as an infringement upon the sovereignty

of India. While the audit provision is apparently standard in all agreements signed between USAID and other countries, the interpretation of audit rights to the substantial and continuing reflows involved in this project creates a unique problem. Negotiations and discussions were prolonged. Meanwhile oil shipments were suspended. Uncertainty about the outcome, the possibility that support for the project might be terminated, caused NDDB/OVOW to take the prudent precaution of minimizing organization expansion efforts and infrastructure investments and to consolidate achievements already made.

There were other unforseen misfortunes, a late monsoon and severe storm devastated much of the kharif season groundnut crop in Gujarat, slowing organizational progress and reducing groundnut procurement sharply in that state.

These setbacks caused delays that made it impossible to achieve end of project goals by 1985-86 but may have helped to insure ultimate success of the project. Important lessons have been learned because of the experiences with the federations of Gujarat (GROFED) and Madhya Pradesh (OILFED). Much has been learned related to procurement of raw materials, achieving individual and society membership targets, production enhancement, marketing, capital construction, etc.

The following will be a summary of the more important findings of the evaluation.

Processing

The strategies employed were to acquire and renovate existing processing plant facilities and to construct new plants with the latest technology and machinery. This, it was assumed, would enable the federations to compete with the private oilseed processors.

The capital investment for processing facilities and the fixed costs of operating are relatively high in India. This necessitates a high level of utilization of the facilities to keep the unit costs of output competitive. Difficulties in procurement and the lack of adequate storage have contributed to the inability to operate the plants 300 days a year.

The handling of materials for incoming oilseeds, in-process materials and finished products is uneconomical. This is all done manually with gunny bags. The entire process should be mechanized, particularly the operation of the solvent plant to extract the cake as it is produced. This will save labor, improve the solvent extraction efficiency, improve the quality of the solvent extracted oil and eliminate the expense of buying gunny bags.

Hexane losses are very high in solvent plants. This is usually caused by intermittent plant operations which results from a lack of raw materials, insufficient electricity, power failures and an imbalance between the production of cake and the needs of the

solvent plant. The second major contributor to the high hexane losses are the limited capacities of the condensing equipment and cooling systems. The new plants will have refrigeration equipment which will reduce this problem.

Although the Government of India has endorsed the Cooperative Development Program, there is a problem with the cumbersome procedures required to obtain licenses to establish and operate processing plants. The minimum period of time is 12-18 months to secure the appropriate approval of the different local, state and central authorities.

One feasible short range solution to the power failure problem is a generating system which uses groundnut shells as an energy source. The shells are actually converted into pellets and burnt to produce a gas that will run a gas engine generator.

The project planning being performed by NDDB staff and the state federations is quite good. There is a good rapport between the groups and their project plans are technically sound.

Financial Management

The financial planning, long and short term, is very weak within OVOW, the state federations, including the Boards of Directors, and

the processing plants. There is limited budget work performed before a fiscal year begins, very little monitoring of expenditures during the year and no long term projections of costs and revenues.

While it is true that the state federations have audited financial statements, they do not segregate by ledger either the receipts or disbursements of funds to NDDB/OVOW. This is important if OVOW is to be able to manage the project funds more effectively. There must be an audit trail to relate budget and expenditures by action item.

The state federations should be divided into geographic regions, and the processing plant unit managers be given semiautonomous jurisdiction within their area. This would provide for more decentralization and permit the unit manager to exercise his discretion in raw material procurement to maximize plant utilization. The profitability of the plant is related to the price paid for the raw material, the selling price of the finished product and the maintenance of a low fixed cost per metric ton. A computerized financial planning model is needed to assist the unit managers in forecasting the cost of processing.

The budget requirement to fully fund all planned state federation for a period of seven years is Rs. 322 crores. There is a budget deficit of Rs. 61 crores which can be reduced to Rs. 48 crores by 1989-90. It is recommended that this difference be made up by making available about another 37,000 MT of soybean oil above the 160,000 MT already approved.

The MYOP budget should be reclassified into the three major purposes or activities being supported: developmental; operational; and capital. This would provide the management of NDDB/OVOW with maximum flexibility in managing the funds, without restriction, within each major purpose.

The maximum procurement support available to a federation would decline each year through year seven, when eligibility expired. The interest rate charged for the loans would escalate each succeeding year until the rate at year seven equaled the rate of the commercial lending institutions.

The federation share capital provided by OVOW should be related to the success a federation has in achieving its individual and society membership. Otherwise, there is no incentive to work at cooperative organization and development in the short term.

A cadre of professional financial analysts are needed immediately within OVOW. This core staff could then be utilized to train, educate and improve the quality of the personnel at the federations.

Production Enhancement

It is not possible to assess the impact of the production enhancement programs on increases in yield over the short time period since these activities were started. Thus, the assessment is in terms of the potential and the prospects that, with the steps being taken by the federations, real gains will be realized.

The potential and prospects are quite different for each of the participating states. In Gujarat eighty percent of the groundnuts are grown under rainfed conditions in an area with low and uncertain rainfall. Except in irrigated areas large increases in yield should not be expected.

Failure of the state to allocate land made it impossible to establish the planned agronomic center, which was to be staffed by research personnel to do varietal trials and adaptive research. Fortunately, considerable research capacity exists in Gujarat, at the Gujarat Agricultural University and at the National Research Center for Groundnuts at Junagadh.

Madhya Pradesh has made a good start in the production enhancement program. It has given high priority to providing high quality seed of improved yellow-seeded soybean varieties. A 70 hectare farm has been transferred to the federation for a district demonstration farm. Another 107 hectare farm is being transferred for use as an agronomic center. The federation has strong professional agricultural leadership for its research and extension program. Large numbers of field trials and farmer demonstrations have been conducted, with consistently good increases over the state average yields. It appears the technology is in hand and the research and extension staff in place to make rapid progress in increasing production.

Implementation of the production enhancement program in Tamil Nadu has been slow because of the prolonged drought. Land has been transferred to the federation for several district farms and an agronomic center. In addition, work has begun in producing foundation seed for improved varieties.

There are a number of production enhancement suggestions applicable to all the federations. (1) There should be a strategy to stabilize annual yields at moderate levels in rainfed areas rather than trying to substantially increase them. (2) There should be advanced planning to ensure early results from research efforts. In this context, the National Research Institute for Groundnuts should be urged to develop short duration varieties of disease resistant groundnuts. (3) Hydrological surveys should be undertaken of the entire project area to identify locations suitable for groundwater exploration. (4) Studies should be initiated on inexpensive, low energy usage, highly efficient means of water distribution on small farms with wells. (5) Each federation needs a Ph.D. level staff member at headquarters to act as a liaison between the federation and research organizations. Moreover, this individual would plan and supervise applied research and demonstration programs. (6) Each village level society should be provided with storage facilities for inputs (pesticides, fertilizers, oilseeds). (7) The input distribution system should be managed so that each member grower gets his inputs in time and in sufficient quantity.

Procurement Operations and Finance

Procurement conducted under the project is intended to provide an assured and remunerative market for farmer members to support production enhancement efforts, and to provide adequate supplies of raw materials for the efficient operation of project processing facilities.

Levels of procurement achieved by the project have been below target. Delays in project implementation in several states explain much of the procurement shortfall, but many procurement indicators, including procurement per farmer, per hectare, and average farm size have been below target. Procurement from farmer members is likely to be subject to considerable year to year variability because of the vulnerability of primarily rainfed production to the vagaries of monsoon rainfall. These findings have possible implications for the amount of total processing capacity that can be efficiently operated by the project, the optimal size of individual plants, and for procurement policies. It is possible that less total processing capacity will be appropriate and that smaller plants will have a greater chance of running at optimal capacity. It may also be necessary to adopt a policy of procuring and selling raw materials in the open market in order to balance procurement with processing capacity. Where surplus processing capacity exists, which appears to be the case in many regions of India, it may be advisable for the project to be in the position of selling surplus raw materials to

that excess capacity, rather than to be in the position of buying in competition with that capacity. These findings, coupled with the fact that procurement levels will likely be very difficult to project with certainty, suggest it may be better for the project to err on the side of under-investing in processing capacity. However, it is recommended that these issues be the subject of careful and ongoing operations research by the project.

There is no way that the currently budgeted revolving fund for procurement is adequate. It is likely that there would be sufficient funds if NDDB/OVOW is given the flexibility to shift funds freely within the major purpose capital to meet procurement needs. With more flexibility in the capital budget, greater utilization of various financing mechanisms, and a phased-in increase in the use of commercial borrowing for procurement, current project resources should be sufficient to finance targeted procurement.

Procurement pricing policies adopted by the state federations have varied but have, typically, been aggressive in that they generally pay above market prices. It is not clear at this point that the project's assumption on marketing margins is accurate and that the federations can continue to pay higher raw material prices and still earn profits in product marketing. It is also not clear that offering ever higher prices is an efficient means of increasing production. It is recommended that the project adopt a uniform

pricing policy based on market pricing and concentrate on providing the technology and inputs needed to increase yields through its production enhancement program. These policies would appear to have a greater likelihood of achieving the project's goal of enhancing both producer and consumer welfare.

Marketing Operations, Research and Testing

Project marketing activities, including sales of donated oils and commercially imported oils, are intended to generate most of the funds necessary to capitalize the project. Net revenues earned from domestic and international sales of project-produced products are eventually intended to be sufficient to fund the developmental activities of the federations, principally production enhancement. Other planned marketing activities include the operation of a buffer stock to stabilize prices, market research and testing to develop new products, and collection and analysis of market information. Key assumptions involve the domestic sales price of donated oil, the net returns from sales of commercially imported oil and, most important to the eventual financial independence of the project, the net revenues to be earned from sales of project-produced products.

Sales of donated oils have been below target because of delays and interruptions in the receipt of donated oils, and slower than expected organization of state federations. Prices received for

donated oil, however, have been above the originally estimated Rs. 5500/ton, a factor which has led to numerous problems concerning how the 'excess' funds should be used. In this regard it is noted that the amount by which actual prices have exceeded the assumed price (which was stated in 1978/79 rupees) is reduced substantially when the data are adjusted for inflation. The 'excess' revenues are largely consistent with inflationary increases in project operation costs. Revenues from the purchase and resale of commercially imported oil have not materialized and probably will not materialize because of the GOI's decision to canalize all commercial vegetable oil imports through The State Trading Corporation.

Involvement in large scale buffer stocking of edible oils is no longer a viable option for the project because, with the canalization of imports, the Government is now performing this function. Project plans have been revised to include the concept of 'localized buffer stocks' to 'stabilize' prices, but it is not clear that buffer stocking is an appropriate activity for the federations or that the federations can, at this point, afford anything other than profit maximizing decisions regarding the disposition of stocks.

Because of strong domestic demand for edible oils, the marketing of project-produced oils at remunerative prices has generally not been a problem. Occasional state government movement restrictions and requirements for sales to the public distribution system, sometimes at below market prices, pose the greatest potential threat to the

profitable marketing of oils by the federations. Relatively weak domestic demand and prices for protein meals, a persistent problem in the Indian oilseed economy, represent more of a marketing problem to the project. The development of higher priced export markets for protein meals for livestock feeding, and higher-valued domestic uses for protein meal as human food would contribute significantly to improved marketing margins and, possibly, reduced pressure on oil prices.

The collection and analysis of market information to support marketing and planning decisions is now conducted primarily at the federation level. Accurate analysis and forecasting of market trends will be important to the success of the project because of the volatility of the Indian oilseed economy. Centralization of market information, analysis and forecasting functions with a group of well-trained analysts, having access to the NDDB computer, could reduce the cost of good information and give the federations a competitive advantage in the market.

III. PROJECT COMPONENTS

The original multiyear operational plan included seven major components to be funded out of the rupee currency generated by the sale of the donated soybean oil. The value of that oil was pegged at the landed value, Rs. 5,500 per ton, and was to be deposited in a "Special Account". Actual currency generated substantially exceeded Rs. 5,500 per ton. NDDB/OVOW proposed to place these additional rupees in a sinking fund, which included a number of other investment items. Since this procedure did not conform to U.S. Government accounting and auditing regulations, the NDDB agreed to establish a second special account to which these excess funds would be deposited. Five additional components were incorporated into the project as separate budget line items for this fund. In the following table the first seven items were included in the original budget (Special Account I). The last five items are the new action items for which funds are deposited in Special Account II.

Table I: NDDB Vegetable Oil Project : CLUSA/AID Financed Budget (Million rupees)

Action Plan	Original Allocation	Disbursement Upto June 1982	Disbursement Upto March 1983	Proposed Budget 1982 83 thru 1985 86 Low	Proposed Budget 1982 83 thru 1985 86 High	Total Low	Total High
1	2	3	4	5	6	3+5	3+6
1. Processing facilities	596.75	55.941	124.382	762.0	881.5	817.941	937.441
2. OR & CIS Studies	18.50	0.516	0.838	16.77	21.5	17.286	22.026
3. Market Research, Testing, etc.	22.95	0.733	0.734	23.10	27.72	23.833	28.453
4. Oilseed Production Enhancement Programme	419.74	18.658	20.434	484.618	590.052	503.276	607.510
5. Product and Process Development	11.70	0.019	0.079	20.0	20.0	20.019	20.019
6. Manpower Development	30.0	6.198	6.792	48.0	59.570	54.198	65.760
7. Management and Project Implementation	102.87	24.905	31.341	112.94	152.105	137.845	177.010
8. Share capital	Sinking fund	21.0	32.0	222.0	289.0	243.0	310.0
9. Procurement support*	277.49	372.887*	340.41*	425.0*	425.0*	425.0*	425.0*
10. Operational losses/deficit	Sinking fund	-	-	50.0	80.0	50.0	80.0
11. Management training	Sinking fund		-	2.854	3.440	2.854	3.440
12. Co operative development	Sinking fund	0.009	0.258	30.637	35.563	30.646	35.672
TOTAL:	1500.00	500.953	557.268	2197.919	2586.250	2325.948	2714.119

* Revolving fund.

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While the budget projects achievements (expenditures) over a 7 year period, beginning with Project Year 1979-80 through Project Year 1985-86, the team has difficulty in making meaningful assessments of accomplishments against those dates. Whereas the "Official" start up date is considered June, 1979, with the arrival of the first shipment of donated soybean oil from the United States, several months elapsed before the oil was distributed and began generating rupees for funding project acitivites. Actual project activities did not get underway in Gujarat and Madhya Pradesh until 1980-81 and in Tamil Nadu 1981-82. While commitments were made by the Governments of Karnataka and Andhra Pradesh, only recently have they taken the necessary steps to begin implementation in 1983. In view of this, the evaluation team found it difficult to assess achievements in all elements of the project against the initial or revised planned targets based on a 1979-80 start-up date and project completion by the end of seven years, 1985-86. Only two federations can be said to have completed three years of operation (Phase I) at this time. Two of the state federations cannot complete their first phase before 1986-87 and will complete seven years of implementation only by 1990. There is no way that project goals as set out in the multiyear operational plan can be achieved by 1985-86. They can probably be achieved by 1990, when each of the state federations will have operated for seven years.

In the following section each of the twelve project components will be discussed in terms of accomplishments to date, lessons learned, problems identified, implications for achieving end of project goals and recommendations with respect to modification of strategies or targets for Phase II of the project.

A. Processing Facilities

The overall objective of the processing component of the project is to provide efficient facilities to transport, store and process the farmer cooperative members' production. The processing component is a major step in the vertically integrated system of production, procurement, processing and marketing for the general purpose of improving the income of the farmers.

The primary strategy planned for achieving this objective was to acquire existing processing facilities and improve them to the point of being efficient, well balanced operating units or construct completely new facilities as appropriate. Storage and transportation systems were included to serve the farmers at harvest time and provide the processing units with oilseeds sufficient for operating 300 or more days per year.

The processing facilities would be diversified to produce a variety of products from the raw materials and any available by-products. Groundnut shells that normally have little value would be utilised to produce steam and electricity. Other by-products such as gums, fatty acids, etc., from the oils would be further processed into marketable products or sold to other users.

It was proposed to establish the processing facilities in concentrated oilseed production areas to assure the availability of

oilseeds for processing. These areas also appeared to be where there was the greatest need for improvement of the farmers' position in marketing their production at a fair price.

The plan was to begin the project at a modest level and expand as indicated by experience and the needs of the concentrated production areas. This strategy was the same as that employed by the NDDB in the successful "Anand Pattern" to develop the dairy industry.

One of the strategies planned for accomplishing the goals of the project was the employment of a group of experts from within India, and abroad, plus a nucleus of the Project Authority Management Information Group to perform an operations research study. The OR study would consider the various phases of the processing component as a part of the study and recommend a program for storage and transport.

The end-of-project goals for the processing component of the CLUSA/AID financed project were set at 1.381 million tonnes per year of crushing capacity and 564,000 tonnes per year of solvent extraction capacity based on a utilization of facilities level of 330 days operation per year; storage, transportation and packaging equipment costing 150 million rupees; and, cattle feed milling with a capacity of one million metric tonnes per year.

These goals included the establishment of a Research and Development Program to work in collaboration with the marketing manager in the performance of studies in Product and Process Development and Packaging.

Accomplishments:

The quantitative evaluation for the first four years of the project will compare projected capacity targets for the originally planned elements of the processing component with the actual accomplishments to date. This will provide a measure of success of the project.

The evaluation includes capacities for other products that have been established but were not in the original projection. This will be an indication of the flexibility of project management based on the learning process, and to some degree, project accomplishment. Cattle feed milling is not included but it was a part of the original plan. However, nothing has been done to establish any feed manufacturing capacity to this date. This product was placed in a state of hold due to technical problems and to allow more time for other new products.

Table 1 (Appendix III A (1)) shows that the original target for establishing crushing capacity by the end of the fourth project year was 4,36,000 tonnes per year. The accomplishment to date amounts to 2,77,200 tonnes per year, or 64% of the target.

The solvent extraction target for this time period was 1,96,000 tonnes per year against an actual capacity of 1,76,550 tonnes per year, or 90% of the target.

The oilseed storage target was to balance the storage capacity with the needs of the plants to provide for at least 300 days of operation. No oilseed storage was added during the first year and there was none existing at the facilities that were taken over. However, by the end of the second year, 6,000 tonnes had been established and by the end of the fourth year this had been increased to 26,000 tonnes.

Oil storage was not specified in terms of capacity in the project plan, but the amount that has been established is 19,400 tonnes. Packaging was planned to be included in the project but the capacity was not specified. The actual amount established was 65,340 tonnes per year on the basis of 330 days per year operation at 8 hours per day.

Vanaspati manufacture was not projected initially but an annual capacity of 24,750 tonnes has been acquired.

Oil refining capacity was not included in the original projections, but the facilities to refine 36,300 tonnes per year have been acquired. This is considered to be one of the important elements in balancing the functions of processing.

The Cooperative Union of Canada (CUC) financed facilities are shown in the table to indicate the capacity that they will add to the CLUSA/AID project. The table shows the capacities for crushing and solvent extraction and the timing planned for bringing the CUC facilities on stream.

The program to establish transport systems to handle oilseeds and oil in bulk form was not intended to provide transportation for all of the bulk handling for the facilities. It was planned that each facility would purchase only two to four bulk grain and oil trucks and use them as a demonstration to the industry. They would use them as needed but would rely on the public and private contract carrier industry for practically all of their hauling needs. Bhavnagar now has four trucks and more are planned for other facilities. This program, as originally planned, is about on schedule.

The accomplishments to date include several improvements that have been made in the acquired plants and the progress that has been made on new facilities. The Bhavanagar plant has completed renovation of the decortication plant and improved the efficiency by an estimated 60%. A new layout of the oil mill has the planning completed and the work is scheduled to be done during the slow season of 1983-84. Work is underway on seed storage, a new boiler, replacement of a hydrogen gas generating unit, finished product and oil storage, and renovation of the packaged products storage and offices.

The Jamnagar facility has increased capacity by adding two decorticators and replacing the old expellers with new high capacity units. Other work completed includes the addition of oil storage and groundnut storage, addition of oil packaging, a new boiler, cooling water tower, and a 500 KVA transformer.

The new Junagadh plant is in the process of being completed. It will be a 400-tonne per day modern crushing and matching solvent extraction unit complete with refinery and adequate storage of oilseeds, oil and packaged oil.

Other facilities have been started up and operated with improvements in efficiency through modernization of layout and the addition of new equipment. The additional capacities and the actual processing quantities to be added through the first four years of the project are also shown in Table 3, Appendix III A (3).

Lessons Learned

Taking advantage of lessons learned on a long range project as it progresses is important. The general lesson learned early in this project was that if the cooperative is to provide the intended service to the farmers, it is necessary to acquire or create and operate all elements of the processing component economically and on a competitive basis.

The capital investment for processing facilities and the fixed costs of operating are relatively high in India. This fact necessitates a high level of utilization of these facilities in order to keep the unit costs of output within competitive ranges. Difficulties in procurement and lack of adequate storage have been a significant factor in the inability to operate the plants at 300 days per year or more. Crop failures, shortages of fuel, electricity and chemicals do happen and result in inefficient operation due to low utilization.

Procurement operations must be supported by adequate storage and transport systems to permit plant operations at economic utilization levels. The storage and transport systems will need to serve the village collection points, intermediate satellite storage and the processing plants. A 400-tonne per day plant should have on-site storage of 40 to 60 days oilseeds and over 100 days in satellite storage based on capacity operations during the harvesting periods. The village collection points should hold up to two weeks procurement during the peak buying seasons. Transport systems, public and private, should be adequate to transport at least three times the plant capacity on a daily basis.

It has been realized that processing facilities cannot be operated competitvely unless full advantage is taken of the ability to utilise all portions of the raw material to produce the most marketable products. When feasible the products should be processed to their highest marketable value and waste or by-products should be used or sold.

Materials handling systems as they now exist for incoming oilseeds, in-process material, and finished products are uneconomical. The oilseeds are received and stored in gunny bags. The bags are emptied as the seeds are processed and then reused. Cake from the expellers is temporarily stored in gunny bags for supplying the solvent plant. Mechanization of handling, bulk storage and running the solvent plant to extract the cake as it is produced will save labor, improve the solvent extraction efficiency, improve the quality of the solvent extracted oil, and eliminate the expense of buying the gunny bags.

The operations research study revealed that economies of scale could be effected in larger plants and that plants with capacities of 400 to 725 tonnes per day would be the most feasible size if other factors such as procurement and marketing could support a utilisation level of 300 or more days per year of operation.

The OR study pointed out that processing technology in India is very out-dated and measures should be taken to update the technology of

new facilities by importing some new equipment and working with manufacturers and consultants to improve the overall deficit in technology.

Probably the most important of lessons learned has been that planning for the establishment of complex organizations and systems cannot be perfect. Original plans and estimates must be subject to adjustment as changes in the original assumptions are encountered. Complex organizations of people with various skills and talents cannot be built overnight.

Implications for Achieving End-of-Project Goals

The prospects for achieving the end-of-project goals are good if some of the specific goals are altered to lower some and raise others to ultimately achieve the same overall planned end result.

As indicated in Table 2, Appendix III A (2), the present plans for acquisition/construction of crushing facilities will bring the total capacity to 768,900 tonnes per year by the end of the seventh project year. The original target of 1,381,000 tonnes per year will not be reached. Further planning for growth, however, indicates that 1,346,400 tonnes per year crushing capacity will be reached by the end of June 1989 or what would be the tenth year of the project.

Solvent extraction capacity will come somewhat closer to reaching the original target for annual capacity. It was 564,000 tonnes per year and the capacity projected based on current planning is 466,950 tonnes per year at the end of the seventh project year. Also, based on current planning, the solvent extraction capacity will reach 697,950 tonnes per year by the end of the tenth year of the project.

It should be noted that all capacity quantities for the CLUSA/AID financed project are based on 330 days per year of operation to compare with the original targets which were on this basis. When comparisons are made based on more realistic operating schedules, conversions will be necessary.

The achievement of end of project goals for the processing component will have some effect on the achievement of the goals of production, procurement and marketing. The processing component is a necessary step in the vertically integrated system. It is important for the growers' organizations to own processing units, which allow them to devlelop a technological advantage over the competition by updating exising facilities and constructing new facilities incorporating the latest available technology. It provides the production component with a farmer-owned processing capability that can enhance the income of the members. Success in performance of economical processing operations will affect the incentive of the members to produce more and sell more of their produce to the cooperative.

Achievement of goals relating to processing efficiency will also affect marketing achievements. The products must be produced at costs which allow them to be sold in competitive markets.

Problems/Issues:

Some of the major problems that have been experienced by the processing component are typical of the oilseed processing industry. When a decision is made to acquire an existing facility, the problems existing at the time of the takeover become a liability. Progress has been made in correcting problems in the acquired facilities and the planning for new facilities will preclude the repetition of previous problems.

Hexane losses have traditionally been high in the solvent plants. The losses are 8-14 liters per tonne compared to losses in the U.S. of 2-4 liters per tonne. The greatest single cause of hexane losses is the intermittent plant operations. The intermittent operation of the solvent plants is due to the lack of raw materials, insufficent electricity to run the plant as a unit, power failures and the imbalance between the production of cake and the needs of the solvent plant. The second major contributor to the high hexane losses is capacities of the condensing equipment and cooling systems and inadequate mineral oil recovery systems. Refrigeration equipment for the hexane vapor recovery systems is being installed in the MCW plants to reduce hexane losses.

Safety of equipment in some of the acquired solvent plants is still a problem. In some solvent plants belt-driven pumps and speed reducers still exist. However, plans are to change these units as replacement equipment is available. Some progress has been made on this problem since it was first pointed out by the operations research study, and this aspect of safety is being taken care of in the new facilities.

In some of the crushing plants the expellers are small and require high horsepower and manpower for operation and maintenance. They use reverse worms, which are economical only where there are no provisions for solvent extraction of the cake. The reverse worms get more oil out at the crushing stage but the total through-put is much less.

Materials handling is mostly by manual labor and is very expensive. In some instances the cake from crushing is bagged and stored for as much as 15 days before it is solvent extracted. The cake should never be allowed to cool as it then generates fines when it is milled which reduce drainage in the extraction process and increases the energy required to keep the extractor up to normal operating temperature.

It was observed that cleaning and dust collection equipment are needed in some of the plants. Any foreign material such as stones and dirt will cause damage and fast wear-out of equipment as well as reduce the efficiency of the labor.

Most of the acquired refineries are the batch type and are of small capacities. They are equipped with plate filters which require excessive maintenance and labor for cleaning.

The Government of India has endorsed the cooperative development program, but there is still a problem with the cumbersome procedure for obtaining licenses to establish and operate a processing plant. In most instances the local, state and national governing bodies require a number of licences and permits which usually causes a year or more delay on each new facilitiy project.

Environmental issues have not caused any real difficulties with plant establishment or operations. The plants are being required to install treatment units for effluent to comply with local and national regulations, but this is being done and the enforcement agencies are apparently satisfied with the program. In some of the groundnut decorticating operations dust is a problem but usually more of a housekeeping problem than a threat to personnel health. No real health hazards were observed during a series of plant tours.

The problem of power failures and cut-backs in electricity will exist until sufficient capacity is built and distributed to the public and industry. This may take years to accomplish. Some plants have diesel generators to provide emergency power but this is not ordinarily economically feasible for routine plant operations.

One possible short-range solution to the electrical power problem is in the planning stages. It is a generating system using groundnut shells as an energy source. The groundnut shells will be converted into pellets and pyrolized to produce a gas that will run a gas engine generator. The system will produce a net 750 KW per hour, which will be about 30-40% of the requirement for the facilities at Junagadh, where it is proposed to be located. The history of that area for power cut-backs is in the range of 30-40%. If the generating capacity should require additional units to cover larger cut-backs, the groundnut shells will be available. The plant will produce about 100 tonnes per day when operating.

Processing Facilities Performance:

Table 3, Appendix III A (3) is a listing of the plants in operation under the project at this time showing some of the key performance factors, including utilization.

The Bhavnagar facility operated the crushing unit 304 days in the past fiscal year (April-March) yet crushed only 32,000 tonnes out of a possible 82,500. If the capacity is converted back to the 304 days operated, it becomes 76,000 tonnes. This indicates that only 42% of the crushing equipment was running on the average for the 304 days.

A comparison of the solvent extraction capacity shows that it operated 256 days and the cake extracted was 22,600 tonnes. The amount that could be run in 256 days is 38,400 tonnes. This indicates that the plant operated at about 59% of capacity when it was running.

The oil yield from the crushing operations was 25 to 29% of the total weight crushed. This yield is less than what is normally expected but this is not very importnat if the solvent extraction plant has a good yield. The solvent extraction plant showed a yield of oil ranging from 8 to almost 10% during the years since the project was started. This is about what is normally expected with the low yield from the expellers. This means that the total oil from crushing and solvent extraction of groundnuts amounts to 30 to 32% of the original weight as received.

A similar comparison of the other project plants indicates a 50% or less utilization of the available capacity.

The oil yields at Anand and Rajkot are not comparable to plants running groundnuts only. These plants are running both cottonseed and groundnuts, and the material run and oil yields are not clearly segregated with days operated on each.

Recommendations:

Materials handling systems as they now exist for incoming oilseeds, in-process material, and finished products are uneconomical. Mechanization of handling, bulk storage and running the solvent plant to extract the cake as it is produced will save labor, improve the solvent extraction efficiency, improve the quality of the solvent extracted oil, and eliminate the expense of buying the gunny bags.

Hexane losses are high in the solvent plants. The greatest single cause is the intermittent plant operations. The intermittent operation is due to the lack of raw materials, insufficient electricity to run the plant as a unit, power failures and the imbalance between the production of cake and the needs of the solvent plant. The second major contributor to the high hexane losses is low capacities of the condensing equipment and cooling systems and inadequate mineral oil recovery systems. Each of these conditions should be corrected in so far as possible.

Safety of equipment in some of the acquired solvent plants is still a problem. In some solvent plants belt-driven pumps and speed reducers still exit. However, plans are to change these units as replacement equipment is available. Some progress has been made on this problem since it was first pointed out by the operations research study, and this aspect of safety is being taken care of in the new facilities.

In some of the crushing plants the expellers are small and require high horsepower and manpower for operation and maintenance. They use reverse worms, which are economical only where there are no provisions for solvent extraction of the cake. The reverse worms get more oil out at the crushing stage but the total through-put is much less.

Materials handling is mostly by manual labor and is very inefficient. In some instances the cake from crushing is bagged and stored for as much as 15 days before it is solvent extracted. The cake should never be allowed to cool as it then generates fines when it is milled which reduce drainage in the extraction process and increases the energy required to keep the extractor up to normal operating temperature.

There is still a problem with the cumbersome procedure for obtaining licenses to establish and operate a processing plant.

In most instances the local, state and national governing bodies require a number of licences and permits which usually causes a year or more delay on each new facility project. These procedures should be streamlined.

The problem of power failure and cut-backs in electricity will exist until sufficient capacity is built and distributed to the public and industry. This may take years to accomplish. Some plants have diesel generators to provide emergency power but this is not ordinarily economically feasible for routine plant operations.

TABLE 1 ORIGINAL PLAN AND ACCOMPLISHMENTS TO DATE

PROJECT YEAR *	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
1. CRUSHING CAPACITY (1000 MT/YR)**							
CLUSA/AID Project Targets	14.00	73.00	216.00	436.00	647.50	1,015.50	1,381.00
CUC Project Targets	-	-	-	-	82.50	82.50	165.00
Actual-CLUSA/AID Project	84.15	112.20	227.70	277.20	-	-	-
2. SOLV. EXTRACTION CAPACITY (1000 MT/YEAR)**							
CLUSA/AID Project Targets	6.00	33.00	97.00	196.00	263.00	429.00	564.00
CUS Project Targets	-	-	-	-	66.00	66.00	132.00
Actual - CLUSA/AID Project	49.50	77.55	143.55	176.55	-	-	-
3. OILSEED STORAGE CAPACITY (1000 MT)							
Original targets			Not specified				
Actual	-	6.00	16.00	26.00	-	-	-
4. OIL STORAGE CAPACITY (1000 MT)							
Original targets			Not specified				
Actual	3.45	11.90	13.60	19.40	-	-	-
5. PACKAGING CAPACITY (1000 MT/YR)***							
Original targets			Not specified				
Actual	10.56	42.24	63.36	65.34	-	-	-
6. VANASPATI MFG. CAPACITY (1000 MT/YR)**							
Original targets			Not in original plan				
Actual	24.75	24.74	24.75	24.75	-	-	-
7. OIL REFINING CAPACITY (1000 MT/YR)**							
Original targets			Not in original plan				
Actual	19.80	24.75	29.70	36.30	-	-	-

* The project year was changed to start in 1979 due to delays in getting the project started.
** Capacities are based on 330 days per year operation.
*** Capacities are based on 330 days per year at 8 hours/day.

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APPENDIX III A (2)

TABLE 2 NEW CAPACITY TARGETS FOR ALL FACTORS (CLASA/AID PROJECT)

PROJECT YEAR	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
1. CRUSHING CAPACITY (1000 MT/YR)*							
Original targets	14.00	73.00	216.00	436.00	647.50	1,015.50	1,381.00
Recommended new targets	-	-	-	-	475.20	574.20	766.90
2. SOLV. EXTR. CAPACITY (1000 MT/YR)*							
Original targets	6.00	33.00	97.00	196.00	263.00	428.00	564.00
Recommended new targets	-	-	-	-	301.95	301.95	466.95
3. OILSEED STORAGE CAPACITY (1000 MT)							
Original targets		Not specified					
Recommended new targets	-	-	-	-	78.00	177.00	307.00
4. OIL STORAGE CAPACITY (1000 MT)							
Original targets		Not specified					
Recommended new targets	-	-	-		41.50	62.70	98.20
5. PACKAGING CAPACITY (1000 MT/YR)**							
Original targets		Not specified					
Recommended new targets	-	-	-	-	111.54	147.18	249.48
6. OIL REFINING CAPACITY (1000 MT/YR)							
Original targets		Not specified					
Recommended new targets	-	-	-	-	72.60	72.60	97.35
7. VANASPATI MFG. (1000 MT/YR)*							
Original targets		Not specified					
Recommended new targets	-	-	-	-	24.75	33.00	66.00
8. SPECIALITY PRODUCTS (1000 MT/YR)***							
Original targets		Not specified					
Recommended new targets	-	-	-	-	-	-	41.25

* Basis 330 days per year operation at 24 hours per day.
** Basis 330 days per year operation at 8 hours per day.
*** Specialty products include only margatine and defatted groundnuts.

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APPENDIX III A (3)

TABLE 3 INDIVIDUAL PLANT OPERATING DATA*

PROJECT YEAR	1979-80	1980-81	1981-82	1982-83
1. BHAVNAGAR (APRIL - MARCH)*				
Crush capacity - GN OR CS**	49.50	49.50	82.50	82.50
Crush Actual	5.95	18.34	24.73	32.00
Days Operated Crushing	93	148	230	304
Solv. Extr. Capacity	49.50	49.50	49.50	49.50
Solv. Extr. Actual	6.12	10.62	17.97	22.60
Days Operated Solv. Extr.	54	106	176	256
Oil Recovery - Expeller (%)	27.42	29.07	26.15	25.48
Oil Recovery - Solv. Extr. (%)	8.13	9.47	9.94	9.88
Vanaspati Capacity	24.75	24.74	24.75	24.75
Vanaspati Actual	11.02	12.24	10.30	7.55
2. Jamnagar (Nov-Oct)				
Crush Capacity	-	16.50	33.00	66.00
Crush Actual	-	5.52	13.08	7.87
Days Operated Crush	-	161	257	71
Solv. Extr. Capacity	-	66.00	66.00	66.00
Solv. Extr. Actual	-	0.93	7.32	3.99
Days Operated Solv. Extr.	-	11	79	35
Oil Recovery - Expeller (%)	-	22.94	27.15	24.80
Oil Recovery - Solv. Extr. (%)	-	8.59	8.78	8.79

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APPENDIX III A (3) Cont.

PROJECT YEAR	1979-80	1980-81	1981-82	1982-83
3. Dhasa (Nov-Oct)				
Crush Capacity	-	-	16.50	16.50
Crush Actual	-	-	2.56	2.97
Days Operated	-	-	130	134
Oil Recovery (%)	-	-	27.00	27.00
4. Anand (Nov-Oct)				
Crush Capacity - GN OR CS	46.20	46.20	46.20	46.20
Crush Actual	34.27	39.48	27.85	8.33
Days Operated Crush	265	293	219	75
Solv. Extr. Capacity	49.50	49.50	49.50	49.50
Solv. Extr. Actual	19.66	30.01	21.59	10.89
Days Operated Solv. Extr.	175	248	209	99
Oil Recovery				
Cottonseed washed oil	12.60	13.80	13.30	13.90
Solv. Extr. Cottonseed Oil	6.10	6.00	7.00	6.20
Solv. Extr. Groundut Oil	-	7.30	8.40	8.50
Solv. Extr. Raw Oil	16.10	16.60	16.90	16.80

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B. Operations Research and Information Systems

Management Information System

The genesis of the Management Information System (MIS) concept was the need for standardization in the collection and reporting of data. As the OVOW has expanded its activities to a number of state federations in Gujarat, Madhya Pradesh, Tamil Nadu, Karnataka, and Andhra Pradesh, it has become necessary to define a uniform information system. This is particularly important since the different Federations are at various levels of development and experience. The system as designed was to capture all minimum data requirements for OVOW and be flexible enough for the users to address particular needs.

The forms designed for the MIS attempt to capture all the data that is available. This occurs at the village, district and federation levels. What is needed is for the users to review their minimal requirements so an assessment can be made of the data necessary to run the system at the various levels. What follows is what has transpired as a result of a system being imposed without addressing user concerns.

The formal implementation of the MIS is proceeding very slowly within the various state federations. The Gujarat Federation, for example, has a pilot implementation taking place in Bhavanagar

District and their problems are probably indicative of what the other federations will experience as they implement the system.

Bhavnagar district has had problems in convincing the village society secretaries of the need for the system. The secretaries believe they fill out enough forms already and any additional work should be performed by mobile team leaders at the area offices. At scheduled training sessions as many as 15% of the secretaries refused to attend. After the training session it was concluded that only 13% of the secretaries could be expected to complete the forms properly.

It has been determined that under the current data collection system the area offices in Gujarat do much of the paper work of the village secretaries. Consequently, their ability to make field visits is impaired to the extent they must perform clerical tasks. It has been hoped that the MIS system would return the data collection responsibilities to the village level secretaries.

The village secretaries have several explanations for the problems encountered to date: 1) there is a high turnover of secretaries within a number of societies because of funding problems; 2) they have a morale problem because they are not appreciated; 3) their educational background, in may instances, does not extend beyond the sixth or seventh class; and 4) they believe the area offices should perform some of the data collection activities.

If the MIS system is to be established and used as the basis for managerial decision making by OVOW and for Operations Research Studies then the experience learned with Bhavanagar should be educational. For example, any federation contemplating its implementation should begin an indoctrination process of the secretaries. They should understand in advance why the system is necessary, its objectives, and how the system will benefit and serve their needs. The training should be of a continuing nature until complete familiarity with the forms is achieved. When a village secretary is identified as having provided incomplete or inaccurate data, he should be visited and given a training session. This whole process is much more successful, with less resistance, when the system takes account of the needs of the various users.

Village secretaries should be made to understand that the MIS system attempts to incorporate as much relevant information from the old system as possible, and the advantage of MIS is its standardization for all the federations. The success of the proposed MIS system is the timely and accurate flow of data from the village society to the area office, district, region, federation and, eventually, to NDDB/OVOW. As it progresses up the vertical chain, it is aggregated for different purposes. The data are to be used by the federations and OVOW to analyse and track project implementation and, if necessary, provide information for operations research or impact studies.

The project plan envisioned the MIS system being implemented in 5 state federations by the fourth year of the project. This probably will be delayed by at least one year. The Bhavanagar pilot case will probably not be completed for another eight months. After this has been successfully implemented, it will be attempted in other districts. It is not unreasonable to expect that full implementation within Gujarat will not occur for another 12-18 months.

During the interim period when the two systems are partially running parallel it will be important that the managers at the various levels meet regularly, particularly during the procurement season, to review all the data and ensure its accuracy and timeliness.

It is recommended that during the early implementation of MIS, within each of the state federations, that the proposed MIS forms be consolidated and streamlined so that only the most important and relevant data affecting decision making be collected initially. As the users become more familiar and experienced with the system other data elements can be added.

There are no standard budget forms among the different state federations under the existing reporting systems. Each federation had developed its own internal reporting formats. This causes different types of data to be collected and transmitted to OVOW. The MIS system proposed by the MSS consultants recommends certain budgetary forms which are monthly in nature and quite detailed. There is no form which summarizes the itemized budget and the

corresponding revenue budget. An example of what this form would look like, including a yearly cash flow budget and a monthly variance report, are attached.

It should be noted that the approach followd by the Gujarat Federation is viable. They proceeded in a phased in manner and addressed problems as they arose. For example, when resistance was encountered with village secretaries they sent teams out to conduct on site training sessions. Two things which should be done are a more comprehensive explanation to the users regarding the need for the system and a simplification of the forms, which might accelerate their acceptance.

In Madhya Pradesh it was learned that the channels for collecting financial information are not good. This was the result of not having sufficiently trained staff in the accounting/bookkeeping area. The lack of a good information gathering system was also mentioned. These problems can be resolved by having managers meet regularly to review problems and their solutions. If there are staff shortages, it too can be addressed as another problem to be resolved. If the head office has isolated such problems then its their responsibility to take the initiative to correct them.

Operations Research

Operations Research (OR) is intended to support overall program management and planning. As originally planned, an OR study group consisting of Indian and foreign experts and NDDB/OVOW's Management Information Group would conduct a comprehensive OR study which would assist in the design and implementation of the project in the proposed project areas. That study was completed in 1980, with field work limited to the Gujarat project area, and at least some of its guidelines and recommendations have been of assistance in project implementation to date. Separate OR studies have also been commissioned by the Gujarat and Tamil Nadu Federations to assist in their planning. In the original plan, there was not to be a close link between OR, the Management Information System (MIS), and the Market Intelligence Program (MIP). Data from these systems were to feed into project management decision making and occassional impact studies focusing on identified problems.

Problems and Issues:

(1) As originally planned, OR work by NDDB/OVOW and the Federation's (either in-house or contracted) was to be funded only during the initial years of the project to provide basic guidelines for project implementation. As the project has unfolded it has become obvious that many factors affecting the project (production, procurement, marketing margins, prices, etc.) are very dynamic. There is an ongoing need to adjust original

assumptions, determine the impact of those adjustments on the project, and adjust management strategies and plans accordingly. Examples include the volatility of oilseed/oil/meal price relationships and their impact on processing plant viability, and the dynamics of production and procurement. Consequently, there is a need for ongoing OR work linked closely with the data collected through the MIS and MIP. There is also a need for the development of management tools to assist project and federation level managers to determine the impact of changes in market conditions and policy decisions on financial viability.

(2) Delays and uncertainties in project implementation have made it difficult for NDDB/OVOW to form a fully-staffed OR/impact study group (there is now only one person in the OR group). Delays on the implementation of the MIS have also slowed the collection of data with which to conduct meaningful research.

(3) The delays and uncertainities in implementation have also led to a number of cases where implementation of plans has, apparently, preceded the completion of careful study of feasibility and alternatives. An example would appear to be the initiation of a large scale soybean processing plant building program in Madhya Pradesh without a study of the future and economics of soybean production in the state.

Recommendations

The project would likely benefit from an ongoing program of OR linked with the MIS data and centralized at NDDB/OVCW. While some projects might be more reasonably given to outside consultants, it is probable that more practical and meaningful results would come from an in-house group which is very familiar with project operations and needs. OR work should focus on specific project and federation problems (for example: procurement, storage processsing, pricing, etc.). It should be concerned with the development of management tools which allow more rapid and complete assessment of changes in assumptions, prices, and policies on project objectives and financial viability. OR work might be efficiently linked with the recommended work on market analysis and forecasting.

APPENDIX III B (I)

1983-84

Operating Budget

Item	Rs. Amount
Operating Costs	
Raw material	
Utilities	
Labor	
Maintenance	
Insurance	
Packaging	
Chemicals	
Administration	
Telephone	
Telex	
Postage	
Travel	
Legal fees	
Training	
Interest on loan	
Principal Repayment	
Total	
Investment	
Capital	
a) Construction	
b) Procurement	
c) Share capital (detail)	
Revenue (Sales)	
a) Refined oil	
b) Deoiled cake	
c) Vanaspati	

APPENDIX III B. (2)

1983-84
CASH FLOW BUDGET
(in Rs. 000)

Item	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
Operating Costs												
Raw material												
Utilities												
Labor												
Maintenance												
Insurance												
Packaging												
Chemicals												
Administration												
Telephone												
Telex												
Postage												
Travel												
Legal fees												
Training												
Interst on loan												
Principal												
Repayment												
Total												
Investment												
Capital												
a) Construction												
b) Procurment												
c) Share capital (detail)												
Revenue (Sales)												
a) Refined oil												
b) Deoiled cake												
c) Vanaspati												

APPENDIX III B (3)

1983-84
VARIANCE REPORT
Month _____

Item	Monthly budget Cash Flow	Monthly Expenditure	Difference	Year to Date Budget	Year to Date Exp.	Diff.
Operating Costs						
Raw material						
Utilities						
Labor						
Maintenance						
Insurance						
Packaging						
Chemicals						
Administration						
Telephone						
Telex						
Postage						
Travel						
Legal fees						
Training						
Interest on loan						
Principal						
Repayment						
Total						
Investment						
Capital						
a) Construction						
b) Procurment						
c) Share capital (detail)						
Revenue (Sales)						
a) Refined oil						
b) Deoiled cake						
c) Vanaspati						

C. Marketing Operations, Research and Testing

The bulk of the project's revenues are to be generated from its marketing operations. The components of project marketing activities, as originally planned, were:

- Sales of donated oils,
- Procurement and sale of commercially imported oils,
- Domestic and international sales of project-produced products,
- Operation of a buffer stock to 'stabilize' prices,
- Market research and testing to develop new products, and
- Collection and analysis of market information.

Sales of donated oils were to generate most of the funds necessary to capitalise the project, with sales of commercially imported oils also providing some funds. Earnings from sales of project-produced products would eventually be sufficient to sustain all or most of the project's developmental activities; principally production enhancement. The buffer stock, consisting of commercially imported, as well as domestically produced and procured oils, was to be used to 'stabilise' prices. Market research and testing activities were to focus on the analysis of consumer preferences and the development and testing of new products, including blended oils and defatted groundnuts, and flours, snack foods, and dal analogs made from de-oiled cakes. Market information collection and analysis was intended to support project marketing decisions.

As the project was originally formulated, the generation of sufficient revenues depended on several assumptions. The most important of these involved the domestic sales price of donated oils, the net revenues to be derived from sales of commercially imported oils, and, most important to the eventual financial independence of the federations, the net revenues to be earned from sales of Federation-produced products.

Accomplishments

Marketing of Donated Oil: Marketing of donated oils has been conducted primarily through co-operative societies and retail outlets established under the project in Gujarat, Madhya Pradesh, and Tamil Nadu. In Tamil Nadu, some oil has also been sold through approved private retailers. The quantities of donated oil sold have generally fallen below target. Prices received, however, have been well above the targeted level of Rs. 5,500/ton. The amount by which unit prices have been above original expectations is reduced substantially when prices are adjusted for inflation (see Appendix III C(1)).

The slower than expected rate of sale of donated oils has stemmed from delays in receiving initial shipments, interruptions in the flow of donations because of procedural problems resulting from their higher than expected sales price, and slower than expected organization of state federations under the project. While there were some early problems in establishing consumer acceptance of

soybean oil, these problems appear to have been overcome, primarily because of its low price relative to other oils. Some consumers apparently blend cheaper soybean oil with more expensive preferred oils.

Marketing of Commercially Imported Oil: Original and revised targets for sales of commercially imported oils are provided in Table 2 (Appendix III C(2)). No procurement or sale of commercially imported oils has been conducted so far. When the project was originally formulated, imports of edible oils to India were under Open General License and any organization could obtain a license to import. Since then all imports of vegetable oils have been canalized through the State Trading Corporation (STC). NDDB/OVOW has recently received permission from the Government of India to import 50,000 tons of oil, but the oil would be subject to pricing restrictions which would make the venture risky and potentially unprofitable to the project.

Marketing of Project-Produced Products: Targets and achievements for the project in marketing its own products are shown in Table 3 (Appendix III C(3)). As can be expected from the delays in project implementation, in the organization of state federations, and in organizing procurement, sales of project-produced products have fallen below original and revised targets. Another factor is that the Madhya Pradesh and Tamil Nadu Federations have been reselling oilseeds procured from their members (apparently quite profitably) because they do not yet have their own processing facilities.

The Gujarat Federation is the most established of the federations and is closest to achieving its procurement, processing, and marketing targets. Total sales of products produced by the project in 1982/83 may approach the low revised target level, particularly if the Gujarat Federation sells the substantial oil stocks it accumulated in 1981/82.

Consistent with the inflation of other cost and revenue estimates, sales prices for project-produced products, particularly oils, have also been substantially higher than expected. However, because of higher raw material procurement costs and below capacity operation of processing facilities, project net revenues (trading margins) have been below the projected level of Rs. 500/ton.

Marketing of project-produced oils has primarily been on a wholesale basis, with some sales through co-operative retail outlets including the village level societies. The Gujarat Federation plans to expand direct oil sales through milk booths and home delivery. The marketing strategy has focused on the development of project owned/affiliated retail outlets and the establishment of an image of marketing a higher quality product than competitors.

Marketing of deoiled cakes is conducted in both domestic and foreign markets. Groundnut extractions have been sold in both domestic and foreign markets but aflatoxin problems have constrained international sales. Soybean extractions (small amounts produced by the Madhya Pradesh Federation through custom processing) are sold

almost exclusively in foreign markets. All exports have been through independent brokers and have, like most of India's deoiled cake exports, gone primarily to rupee payment areas in Eastern Europe. Generally, prices received for extractions do not appear to have risen nearly as rapidly as either raw material or oil prices.

The original marketing strategy also included the export of HPS groundnuts, but, so far, HPS groundnut exports have been limited to about 5,000 tons exported by the Gujerat Federation in 1980-81. The major problem has been the high cost of groundnuts in India relative to major competitors in recent years. Current government policies which canalize HPS groundnut exports through the National Agricultural Cooperative Marketing Federation (NAFED) and subject exports to quota restrictions and, occasionally, minimum export prices, could limit exports even in a more favourable market.

Buffer Stocks: The project's plan to be involved in the operation of a buffer stock to stabilize national oil prices has not materialized. With canalization of all vegetable oil imports through the STC, the STC is now essentially performing this function. The project has now adopted a policy of 'localized buffer stocks' to be implemented by the federations and intended to moderate sharp upswings in prices in regional markets. It is unclear how effective these operations have been, what their exact purpose is, or how they differ in concept from profit maximizing marketing operations.

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Market Research and Testing: Although the project eventually stands to gain substantially from NDDB's experience in this area, relatively little market research and testing work has been done so far because of delays in project implementation. Samples of blended oils have been developed and tested on a limited basis, but this effort is at a stand-still because of government regulations prohibiting blending. Small consumer 'pacs' of vanaspati and groundnut oil have been developed, but it is too early to tell whether or not they will be successful. A background study of consumer preferences has been conducted in conjunction with an NDDB study, and there have been campaigns to promote the sale of donated soybean oil and project-produced oils. Some preliminary work has been done on the development of human foods from oilseed extractions. A development programme for dal analogs is being organized in collaboration with other institutions. Preliminary work has also been done on processes for reducing aflatoxin levels in groundnut extractions and in developing defatted groundnuts. None of these products is near the market testing stage yet.

Market Information: Most of the collection and analysis of market information to support marketing decisions is conducted at the federation level. The Gujarat and Madhya Pradesh Federations are actively involved in these activities and the Tamil Nadu Federation will begin shortly. Information is collected on daily prices and arrivals of seeds, oils, and oilcakes in numerous domestic markets, primarily through trade and government sources. Information on international market conditions for oilcakes and extractions is

collected from brokers. NDDB/OVOW has also been involved in the collection and analysis of market information with the assistance of its computer facility and well-trained analysts. However, there does not appear to be a close working relationship between NDDB/OVOW and the federations on these matters.

Lessons, Issues and Implications

1) The revenue side of the project's budget appears to have changed dramatically from both original and revised targets. Proceeds from the sale of donated oil have been substantially above original estimates and, if STC policies on the release and pricing of imported oils continue to support higher real prices for oils in the Indian market, it is likely that unit value realizations from the sale of donated oil will continue to rise. Similarly, prices received for project-produced products have been higher than expected, as have procurement costs, and it is likely that they will continue to rise. Expected revenues from the sale of commercially procured oils have not materialized and, given current policies on imports and import pricing, it appears that project revenues from this source will be sharply reduced - perhaps to zero. The costs, if any were projected, of operating a national buffer stock will no longer be incurred by the project since this function is now performed by the STC. The net impact of these changes on likely project revenues is unclear and must be evaluated. Conversion of the project budget from 1978/79 prices to current prices would make evaluation of changes in project revenues and costs easier and more meaningful.

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2) Marketing margins on project produced products appear to be tighter than originally expected. Because operating profits are eventually expected to contribute significantly to other project costs, marketing margins must be watched and analyzed carefully. Factors to be considered in evaluating trading margins include:

(a) The 1981/82 year (when the Gujarat Federation incurred substantial operating losses) was probably a tight year throughout the industry because of the unexpectedly large jump in oilseed production which led to overpricing of raw materials during procurement. The rapid increase in summer production of groundnut and rapeseed has likely increased uncertainty in the market and may be contributing to overpricing of the kharif harvest. Nevertheless, as long as domestic production remains unstable and dynamic, it is likely that the project's processing and marketing operations will be subject to unstable and somewhat unpredictable trading margins.

(b) Per unit costs of production, and the impact of underutilization of processing capacity on per unit costs, will increase sharply when processing plants begin to repay their loans. Fixed costs of production were very low in 1981/82 and 1982/83 because none of the project's plants have begun to repay their loans and, therefore, the cost of capacity underutilization was low. Loan repayment obligations will increase fixed costs dramatically.

However, the access of project processing operations to concessional loans from NDDB/OVOW for both plant and procurement financing should continue to give project processing operations an advantage over facilities which must rely on market financing.

3) Marketing of project produced oils, particularly crude groundnut oil, has generally not been a problem because of strong domestic demand for vegetable oils. However, there are some problems needing attention in order to improve margins, particularly for solvent extraction.

(a) In some cases solvent extracted groundnut oil has been sold as soap stock at sharply reduced prices because the oilcake from which it was extracted was stored too long and developed a high percentage of free fatty acids. Shortages of power which prevent simultaneous operation of expeller and solvent extraction plants appear to be a major casual factor.

(b) Solvent extracted oil from black variety soybeans usually must be sold at a considerable discount because of its blackish colour. Improved dehulling procedures may enhance the value of the oil.

(c) Solvent extracted and refined oils, which must command a premium price to cover costs of production, appear to be relatively difficult to market in India at a price which will ensure profitability. This is felt to be largely a problem of targetting these oils at the proper markets -- primarily in urban areas.

Margins on solvent extraction would appear to be very slim. Achievement of high capacity utilization rates and effective efforts to develop more remunerative markets for solvent extracted oils are necessary.

4) Relatively weak effective demand for oilcakes and, particularly, extractions for livestock feeding is a persistent problem in India's oilseed economy. This phenomenon has contributed to relatively high oil prices and usually low protein meal prices in India compared with world markets. The development of export markets and higher-valued human uses for deoiled cakes should contribute substantially to improved trading margins and, possibly, reduced pressure on oil prices. Remunerative markets for extraction are particularly important to the development of the solvent extraction industry and the achievement of higher oil recovery rates. The following points relate to the project's activities in the marketing of deoiled cakes:

(a) Deoiled cake produced from yellow soybeans has found a ready export market, but cake produced from black soybeans contains black specks which have reduced its acceptance in world markets despite its higher protein content. Improved dehulling methods and/or conversion to production of yellow soybeans could improve marketing margins.

(b) Persistent problems with aflatoxin infestation have reduced the acceptability of Indian deoiled groundnut cake in world markets and depressed its price. Analysis of relative prices for groundnuts, groundnut oil, and groundnut deoiled cake suggests that the failure of cake prices to keep pace with seed prices in recent years has contributed significantly to reduced marketing margins. The strong inverse correlation between oil/seed and cake/seed ratios suggests that higher priced markets for deoiled cake would reduce pressure on oil prices. Solutions to the aflatoxin problem include improved post-harvest handling, drying, and storage practices, the introduction of a recently developed ammonia treatment technology to remove aflatoxin and, perhaps in the longer term, plant breeding for aflatoxin resistance. Farmer adoption of improved handling and drying practices would likely require payment of a premium price. This option may also lead to problems with commingling of infested and

non-infested materials during processing unless widespread adoption of improved practices is achieved. The cost of ammonia treatment, a new and largely untested technology, has been estimated at $15 per ton. The relative cost and feasibility of each option must be carefully weighed.

(c) At present, project production and exports of deoiled cakes are on a small scale. Transactions are handled through independent brokers in small lots packed in gunny bags. While gunny bag packing is currently popular in some markets, it would probably be cost effective for the project to eventually develop a capacity to handle large, bulk shipments. These facilities, particularly brokering and port storage and handling facilities, might be more efficiently operated as cooperative ventures among the federations.

(d) Declining per capita pulse production, coupled with the importance of pulses in Indian diets, would appear to make the development of an acceptable protein-rich dal analog from deoiled cake a particularly attractive marketing option. A collaborative agreement to develop dal analogs is currently being worked out. Dal analogs and other marketable human foods manufactured from deoiled cakes would appear to be sound long run options because of the risks involved in depending on cyclical world markets for livestock feeds.

5) The objective of the project's involvement in buffer stocking, including the current plan to operate 'localized' buffer stocks, is not clear. The term 'buffer stock' implies that the project would be involved in extending producer or consumer subsidies by practicing something other than profit maximizing behaviour in the management of its stocks. While the stabilization of prices would benefit consumers, and eliminate some price uncertainty which may be a disincentive to farmers, it is not clear that the project can, or should, absorb the costs. First it is questionable whether releases of project stocks can or should compete with decisions made by the STC in releasing its far larger stocks. Second, several studies have shown that variability and uncertainty in yields are more of a constraint on investment in oilseed production and on producer income than is variability in price. It may be advisable for the project to concentrate on efficient marketing and production enhancement activities at least until it is established that price stabilization programmes can be afforded.

6) The project has been advocating the blending of oils, a practise which is banned by the Government except in the case of vanaspati. The reasons for advocating blending are:

(a) Blending would be advantageous to consumers because high-priced, preferred oils could be blended with lower priced inferior oils to provide a product which is both lower priced and not significantly different in taste than the pure oil.

(b) Blending would give processors more flexibility in dealing with the significant spatial and temporal variations in prices of various oils by allowing them to adjust blends in consumer acceptable, least cost combinations.

(c) It is felt that the private trade is involved to a significant extent in illegal blending, a practice which undermines the project's efforts to successfully market higher priced pure oil.

The Government opposes blending because it is concerned about illegal adulteration of foods. Determining whether a blended oil meets specifications is technically more difficult than determining whether a pure oil is pure. It would be easier for unscrupulous processors and traders to take liberties with blending regulations.

It is uncertain what the impact of legalized blending would be on the demand pattern and prices of various domestic oils. Blending may be particularly beneficial to large, diversified processors who have ready access to various oils which could be blended in least cost combinations. On the other hand, processors who are heavily dependent on one preferred oil, such as groundnut oil, may be hurt by weaker demand and depressed prices for their product. Also, there would appear to be no assurance that processors who now gain a competitive advantage through illegal blending would not maintain that advantage by taking liberties with blending regulations.

7) Accurate analysis of market trends is important to the success of marketing operations, particularly since most of the project's staff are relatively new to the oilseeds industry. A number of contacts in the private trade suggested that success in oilseed processing and marketing in India is more a matter of taking the right positions in the market than of efficiency in processing. Currently, most market analysis work to support federation marketing and planning decisions is done at the federation level. There appears to be large amounts of useful data which analysts do not have the time or resources to analyze effectively. It may be both practical and more efficient to form a centralized group of market analysts with access to the NDDB computer facility to conduct market research and analysis directly linked with information needs of the federations. A group of well-trained analysts with access to the NDDB computer could give the federations a competitive advantage in the market by virtue of more rapid compilation of existing data, and access to more sophisticated market forecasting techniques.

External Factors

Numerous state and national Government policies influence the marketing of oils in India and have an effect on project marketing activities. These policies include:

1) Canalization of all vegetable oil imports through the STC. Import levels, and the release and pricing of imported oils, are controlled by the STC in consultation with the Government.

2) State Governments have the authority to restrict movements of oils across state borders to stabilize prices. They also have the authority to require sales of oil to the state at below market prices for public distribution. These authorities are imposed from time to time and add considerable uncertainity to marketing decisions. Both policies tend to depress product prices and marketing margins.

3) National Government regulations prohibit the blending of vegetable oils except in vanaspati, thus limiting the scope for developing new products.

4) Oilseeds, oils, and oilcakes are subject to various district, state and national purchase, sales, and excise taxes. These taxes can adversely effect the competitiveness of products across state borders and also make cooperative sector processors, who must maintain detailed accounts, vulnerable to competition from those who avoid taxes.

5) Exports of many oilseeds and oilcakes are subject to export quotas and minimum export prices which are adjusted frequently. At times these restrictions inhibit trade, particularly when policy announcements are delayed to the extent that exporters are unable to take advantage of market opportunties.

Together, these policies, and frequent adjustments in them, add to uncertainities in making marketing decisions and can adversely effect earnings. Movement restrictions and marketing requirements imposed by State Governments, and policies which inhibit exports of oilcakes and extractions, would appear to be the most detrimental to the interests of the project.

It is alleged that private traders frequently indulge in illegal marketing practices which give them a competitive advantage. Illegal practices allegedly include stealing of electricity for processing, avoidance of taxes, illegal blending of oils, and illegal movement of oils across state borders when such movements are banned. Cooperatives, which are subject to much greater governmental and public scrutiny cannot indulge in these practices. The extent to which these illegal practices actually occur, and jeopardise the marketing activities of the Federations, cannot be known with certainity.

Recommendations:

Reassessment of Projected Project Revenues: The original assumptions regarding revenues to be earned from project marketing activities, including sales of donated, commercially procured, and project-produced oils and products, need considerable adjustment. The net effect of the changes on total project revenues and project viability at current funding levels is uncertain and must be carefully evaluated. The fact that the original budgets projected

revenues (and costs) in constant 1978/79 prices makes comparison of the budget with actual revenues (and costs) evaluated in current prices very cumbersome. Re-estimation of the budget in current prices would appear to be a practical exercise.

Reassessment of Buffer Stock Policy: It is not clear that the proposed operation of "localized buffer stocks" is either feasible or in the best interest of the project. To the extent that the operation of buffer stocks would involve something other than profit maximizing decisions on holding and releasing stocks, the project may not be able to afford it. Price stabilization programs are more appropriately and effectively conducted at the national level. Operation of a regional buffer stock in competition with the STC would appear to be futile. It is suggested that the project's real contribution to producer and consumer welfare will be through the effective implementation of its efforts to enhance oilseed productivity and that project resources should be focused on these efforts.

Accelerated Development and Marketing of Higher-Valued Non-Oil By-Products: The marketing of vegetable oils at remunerative prices in India is much less of a problem than is the marketing of non-oil by-products. The development of higher-valued products and markets for protein meals and waste products (i.e. groundnut hulls) could be particularly effective in improving overall marketing margins and in

reducing pressures on oil prices. It is recommended that the project accelerate its efforts to improve the acceptabillity of its oilcakes and extractions in higher-priced foreign markets, to develop and market higher-valued human foods, particularly dal analogs, from protein meals, and to find higher-valued uses for waste products.

Centralization of Market Analysis and Forecasting Functions: The federations could obtain a significant competitive advantage in the marketing of their products through the centralization of some market analysis and forecasting functions around the NDDB computer facility. Supply and demand conditions for oilseed and products in India and in world markets are notoriously difficult to predict. The cost of good information, including data collection, processing and analysis, can be very high. A core group of well trained analysts and econometricians with access to computer facilities could reduce the cost of collecting and analyzing the large amounts of available information and improve the quality of forecasts available to the federations. It is important that the work focus on meeting information needs and solving the practical problems identified in collaboration with federation-level analysts.

TABLE 1 TARGETS AND ACHIEVEMENTS FOR SALES OF DONATED SOYBEAN OIL

TABLE 1 TARGETS AND ACHIEVEMENTS FOR MARKETING OF PROJECT PRODUCED PRODUCTS

	PRE PROJECT 1978/1979	1979 80	1980 81	1981 82	1982 83	1983 84	1984 85	1985 86	TOTAL
	PRE PROJECT 1978/1979	1979 80	1980 81	1981 82	1982 83	1983 84	1984 85	1985 86	TOTAL
Original Target									
Original Target									
Quantity									
Oil (1000 tons)	10.0	30.0	37.5	30.0	22.5	15.0	7.5	7.5	160.0
Quantity (1000 ton)		4.2	21.6	64.0	129.2	216.3	325.3	450.1	1210.7
Value (1978/79 Rs.)									
Value (1978/79 Rs.)									
Total (Million)	55.0	165.0	206.2	165.0	123.8	82.5	41.2	41.2	880.0
Total (Million Rs.)		29.0	151.4	448.0	904.3	1514.1	2277.1	3206.7	8540.6
Rs./Ton	5500	5500	5500	5500	5500	5500	5500	5500	5500
Rs /Ton		7000	7000	7000	7000	7000	7000	7000	7000
Achievements									
Deoiled Cake									
Quantity									
Quantity (1000 tons)		50.7	324.3	810.0	1414.1	101.0	452.8	617.6	77.1 1696.2
Value (1978/79 Rs.)									
Total (Million Rs.)		160.6	293.1	97.5	131.6	361.2	543.4	765.1	677.8 2015.5
Rs /Ton		1200	1200	1200	1200	1200	1200	1200	1200
Value (1978/79 Rs.)									
Revised Target Rs (Million)		141.9	218.6	61.5	85.4				509.4
Oil (1000/Tons)		7696	6372	6154	6057				6607
Deoiled Cake (1000 tons)					58.0	123.0	292.0	414.0	NA
					104.0	193.0	477.0	610.0	NA
Revised Targets (low)									
Oil (1000 tons)					29	79	146	207	NA
Deoiled Cake (1000 tons)					54	122	219	315	NA

Values are gross revenues from sale of barrels.
Values deflated using wholesale price index for all commodities.

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APPENDIX III C (2)

TABLE 2 TARGETS AND ACHIEVEMENTS FOR SALES OF COMMERCIALLY IMPORTED OILS

	PRE PROJECT 1978/1979	1979 80	1980 81	1981 82	1982 83	1983 84	1984 85	1985 86	TOTAL
Original Target									
Quantity (1000 tons)	150.0	130.0	125.0	100.0	50.0				555.0
Net Revenue/ton(Rs.)	500	500	500	500	500				500
Total Net Revenue Rs. (million)	75.0	65.0	62.5	50.0	25.0				277.5
Revised Target (High)									
Quantity (1000 tons)			-	-	50	50	50	50	200
Revised Target (Low)									
Quantity (1000 tons)			-	-	0	0	0	0	0
Achievement									
Quantity (1000 tons)	0	0	0	0	0				0

NOTE: Revenue values are in terms of 1978 79 rupees

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APPENDIX III C (3) Continued

	PRE PROJECT 1978/1979	1979 80	1980 81	1981 82	1982 83	1983 84	1984 85	1985 86	TOTAL
ACHIEVEMENTS									
Oil									
Quantity (1000 ton)	NA	NA	14.7	10.4*					NA
Value (current Rs.)									
Total (Million Rs.)	NA	NA	150.6	135.2*					NA
Rs./Ton	NA	NA	10218	12973*					NA
Value (1978 79 Rs.)									
Total (Million Rs.)	NA	NA	100.2	87.7*					NA
Rs./ton	NA	NA	6798	8419*					NA
Deoiled Cake									
Quantity (1000 ton)	NA	NA	35.1	20.8					NA
Value Total (Million Rs.)	NA	NA	48.6	31.1					NA
Rs./Ton	NA	NA	1385	1496					NA
Value (1978 79 Rs.)									
Total (Million Rs.)	NA	NA	32.3	20.2*					NA
Rs./ton	NA	NA	921	971*					NA

NA : Not Available
* : Partial Data

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D. Production Enhancement

It is not possible to make an accurate evaluation of the effect of the production enhancement work on crop yields at this time. The principle reasons being as follows:

1) In the main crop season of 1981 cooperative organization work was only really getting started and no impact of any magnitude could have been measured.

2) In the main crop season of 1982 the whole organization started to move. However, one of the best growing seasons in history occured in this year and it would be difficult if not impossible to separate environmental influence from the extension impact of the project.

3) The second meaningful year (1983) of the project was a below normal year for the main crop season with a 15 day delay in the onset of the monsoon and an early withdrawal. This is not an unusual phenomenon in the semi-arid tropics but still leaves us with two points on our graph. The first was unusually high and the second below the ten year average. If a judgement were made on the basis of yields on this trend line, it would have to be grim indeed.

The initial objectives of the project were to help groundnut producers adopt production techniques which increase unit area yields and decrease the vulnerability of their oilseed crop to climatic variations. These objectives were initially to be achieved as follows:

1) Established regional research centres working on oilseeds crops would supply basic information for production practices to be locally tested and adapted.

2) Area Agronomic Centres staffed by applied research scientists would be set up to develop and test packages of practices that would economically increase unit area yields of groundnuts and soybeans.

3) Mobile teams of two specialists working at and out of the District Farms and each team serving 20 villages. Mobile team members would conduct demonstration and training programmes on the District Farms.

4) Village cooperative representatives would be trained at district farms by mobile team members and would then conduct demonstrations on their own farms.

5) Improved seeds, fertilizers, pesticides, improved implements, and assistance for credit would be provided through the village cooperative societies. Subsidies for most inputs are available from various government agencies.

6) Farm gate procurement and attractive pricing would complete the proposed production enhancement procedure. The ultimate goal of the production enhancement program is to not only increase the income of cooperative members, but to also provide adequate supplies of raw materials to the cooperative federation processing plants. The area required for this production would be acquired in selected districts with enough farmers organised into village cooperatives to ensure adequate supplies of raw materials.

Accomplishments to date (Gujarat)

On the basis of the initial 10 registered oilseed growers cooperative societies a proposal for the registration of a State level Oilseeds Federation was submitted. With the approval of this proposal the Gujarat Cooperative Oilseeds Growers' Federation became a reality. The federation then recruited their own staff for organisational work. The federation's newly recruited mobile teams received training under the NDDB Spearhead Team and the expansion work was under way.

1) Area Agronomic Centre: This goal has not been realized because land acquisition or transfer has not been undertaken by the state government.

2) District Farms: This goal again has not been achieved as originally planned. However, the state in 1980 allocated 18 hectares of their Talaja Farm for GROFED use. This area had not been used for several years so there was a major problem with weeds that are only now being brought under control. GROFED staff are using a small area for adaptive research and the balance of the area for seed multiplication. This is only a temporary arrangement and the state may take back this land at any time.

3) Mobile teams and demonstrations: There are now 34 mobile teams in place. Each mobile team services an average of 30 societies and 2050 farmer members. The mobile teams are coordinated through district offices located at various centres in the project area. Almost 6000 village meetings and 189 film shows were held to teach improved groundnut production practices and to maintain awareness of, and support for, co-operative methods. About 7900 farmers have been trained for aiding the team in efforts to establish strong societies and production enhancement practices. Demonstration plots involving a "package of practices" give village farmers a first hand look at the

advantages of improved methods and, in addition, provides the basis for the production of improved seeds. 366 plots were established during the past year, far short of needs for an educational effort with real impact.

Establishment of an extension organisation which parallels existing functions of institutions and organisations has caused unanticipated effort to coordinate work and avoid duplication. Largely this was done by obtaining government rulings to give mutually exclusive assignments to GROFED in its project area and to the other services outside the GROFED area. The system now seems to be working but there appears to be a need and some opportunity for greater involvement of extension expertise from "outside" sources.

4) Crop Production Inputs & Practices: A package of practices for increasing the yields of groundnuts has been developed. There seems to be very little information available on increases in yields that can be expected on farmers' fields due to the package or the economic feasibility of using these inputs. However, improved seed, fertilizers and pesticides have been distributed from village POGCS. The volume of fertilizer that has been moved has increased substantially from a very modest 2 tons in 80-81 to 4622 tons in 82-83. Volumes of pesticides and sprayers, dusters and improved implements have been distributed in greater numbers and the POGC's expedite this movement by

handling subsidy reimbursements. GROFED is mounting a substantial effort to provide improved seed to its grower members. This is being done through the formation of carefully selected farmers and villages into a seed production network. More than 1137 tons of seed were sold in 81-82 and 950 tons in 82-83. In 1982-83 the following production inputs were supplied through the primary cooperative societies; 3772 kgs. of seed treatment chemicals, 1520 packets of inoculum, 39,692 litres of insecticide, 7309 kgs. of fungicide, as well as the 4622 tons of fertilizer.

Lessons Learned

One lesson learned was that established research organizations within the government framework were going to resist the establishment of a private sector research effort that would be in competition with them. Consequently, the planned establishment of an Area Agronomic Centre and District Demonstration Farms could not be achieved as planned. The Gujarat State Government made a small concession by allocating 18 hectares of an existing state farm to GROFED. Thus, it appears that GROFED will find it necessary to more or less accommodate its activities to existing government agencies. It appears to have the flexibility to do this quite well.

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Implications for Achieving End of Project Goals

1) The Project area covers about 80% of the groundnut acreage in Gujarat. The goal of increasing groundnut production in Gujarat to 2.36 million tons by the end of the project would appear to be an ambitious undertaking. The five year average for the crop years starting in 1977 and ending in 1982 are 2.07 million hectares in groundnuts with 1.838 million metric tons of production and an average yield of 885 kgs./ha. These averages include the above average year of 1981-82, but do not include the below average year of 1982-83. To achieve the stated goal an increase of 522,830 hectares in area will be needed or a 30% increase in yield (ave. of 1150 kgs./ha.). A 10% increase in yield to 974 kgs./ha. would be a substantial achievement in a low rainfall area and would require a 355,000 hectare increase in area.

Production to satisfy the projected processing capacity appears to be a much more attainable goal. With a 1500 ton per day processing capacity running for 300 days per year 450,000 tons of raw materials will be needed. If goals are achieved in society formation, farmer members and groundnut producing area then, even at the stated average yield of 885 kg./ha., 525,000 tons would be produced on the project area. Two problems remain: one, the ability to procure a very large percentage of

membership production and, two, the fact that in some years the total groundnut production can fall below the capacity needs of the federation's processing facilities alone (See figure 1.)

2) The most effective educational tool that extension personnel have available is the result demonstration. Presently only one team member in each mobile team is an agriculture graduate. Even with stepped up farmer training and assistance from other team members the needed demonstration programme is above one person's capacity. A demonstration is showing proven research results and there is no room for failures.

Problem/Issues:

1) The original planning called for research personnel to be stationed at a federation established agronomic centre. The federation proposal for the state government to allocate land for the Agronomic Centre was not approved. Consequently, some alternative had to be devised to satisfy the research needs of the project.

Fortunately, considerable research capability does exist in Gujarat. The National Research Centre for Groundnuts was established in October 1979 at Junagadh. The land and buildings were leased from Gujarat Agricultural University and staffing, development and research have progressed well in a relatively

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short period of time. This institute has established a good working relationship with the International Centre for Research in the Semi-Arid Tropics (ICRISAT) and has access to their considerable resources. No doubt one of the best collections of groundnut germplasm in the world is available to the National Institute from ICRISAT. Sources of resistance to rust and "tikka" have been identified in this collection and are no doubt already in the National Institute's Collection.

When specific problems in groundnut production are identified NRCG and/or ICRISAT should be able to mount a considerable research effort to find a solution. Grants from the Federation could be made for work on specific production oriented problems.

One of the biggest problems that faces the production enhancement work is the great variability in rainfall which hinders the development of a package of recommended practices that will consistantly and economically increase yields in the saurashtra.

There is no evidence that work has been done to determine the economic feasibility of the presently recommended package of practices on farmers' fields. This needs to be done.

Apparently no attempt has been made to conduct a baseline survey for the project area. It is difficult if not impossible to measure progress without knowledge of the starting point. Arbitrary starting points can be established but leave the measurement of progress open to criticism.

In an area with the natural constraints on production that exist in Gujarat it will take time to produce significant results in increasing yields. It will take time for research, for testing, for extension and for adoption. Except in irrigated areas large increases in yield should not be expected.

2) If the major economic objective of the project is to have a year to year flow of raw materials to keep processing plants in operation at full capacity the only sensible policy in a semi-arid area is to put maximum effort into protective irrigation, and recruit heavily in irrigated areas.

The completely overriding environmental factor in semi-arid areas is the certainty that there will be uncertain rainfall. Year to year fluctuations are frequently of the order of two standard deviations.

The best alternative to be followed in short season, low rainfall areas are the use of productive short duration varieties. If for the purpose of an example we can make some

generalised assumptions the value of short duration varieties can be demonstrated.

Let us assume that evapotranspiration losses (water losses from soil and plants) average 6.25 m.m. per day for a well watered crop. This rate of daily loss is common to many semi-arid areas of the world. If the growing season of four different varieties is 90, 100, 110 and 120 days respectively then the rainfall required to carry each variety to maturity without moisture stress would be 563 mm, 625 mm, 688 mm and 750 mm. Any reduction in this amount could be expected to reduce yields. The 13 years average rainfall for the four cropping season months in Bhavnagar and Amreli districts is 542 mm and 535 mm respectively. In Bhavnagar district only two years in the 13 had rainfall exceeding 750 mm, the amount needed for the 120 days variety. There were however 7 years where the rainfall was adequate for the 90 days variety and two more years when rainfall was only about 50 mm less than full crop requirement.* The remaining four years were grim indeed with only 361, 262, 222 and 221 mm of rainfall recorded in June, July, August, and September.

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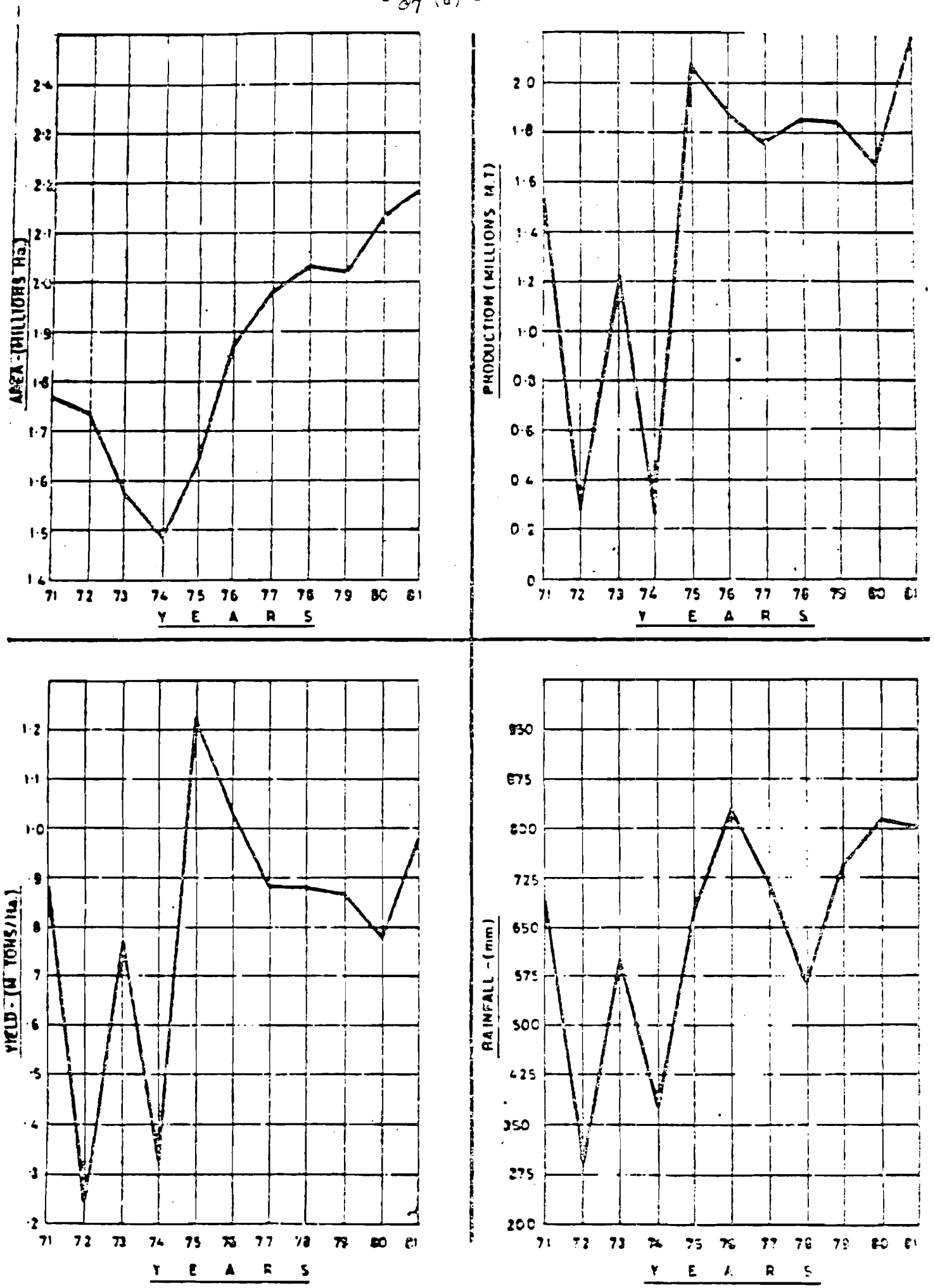
* There may not, of course, be a close correlation between total rainfall and distribution of that rainfall over the 4 month period. It would be useful to examine weekly rainfall data.



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In Amreli District the picture was about the same, with the rainfall in one year adequate for a 120 days variety and 8 years out of the 13 adequate for the 90 days varieties. In two years the yield would be substantially reduced even with a 90 days variety and the other 3 year had only 362 mm, 292 mm and 243 mm of rainfall. With these low amount rainfalls crop failures would be common especially on shallow or light soils. It is evident that short duration varieties will reduce risk in strictly rainfed areas but will not eliminate it.

Recommendations:

1. It would appear from the above analysis that a strategy to stabilize year to year yields at a moderate level in strictly rainfed areas would be a better approach than trying to substantially increase annual yields. Even then it must be recognized that there will be years when, due to very low rainfall amounts, or very poor distribution of the total rainfall received, yields will be very low and failures will occur in less favourable situations (see graphs, Fig. 1).

2) Advanced planning will be needed to ensure early returns from research efforts. The National research Institute for Groundnuts must be urged to develop short duration varieties of groundnuts that are resistant to cercospera leaf spot, rust, and alternaria leaf spot. These varieties should be screened for high levels of seedling vigor and deep root systems.

Research on seed drying and seed storage should also be initiated.

3) If it has not already been done then the government should be urged to undertake hydrological surveys of the entire project area, to locate all underground water. (We understand the federation is planning to request such studies.)

4) Studies should be initiated on inexpensive, low power, highly efficient means of distributing water on small farms with wells.

5) The Gujarat State Government should be encouraged to transfer the balance of the Talaja State Farm to the federation. It could then serve a very useful function as a training, demonstration, and seed production centre.

6) There is need for a Ph.D. level staff member in a high level position at GROFED headquarters to provide liaison between the federation and research organizations. He would also supervise the applied research, and demonstration program as well as the seed multiplication and improvement work. He could provide guidance and direction for the training of agricultural staff members.

Accomplishment to Date, Madhya Pradesh

In Madhya Pradesh the end of project goals were set at 250 oilseed growers' cooperative societies covering 1,25,000 farmer members with 2,50,000 hectares of oilseeds area. With the planned processing plant capacity of one 400 TPD and, at present production levels of about 725 kgs./ha., nearly 1,66,000 hectares of soybeans would be required to operate the processing plant 300 days per year. To achieve this goal on the targeted area seems to be well within the reach of the project.

As of March, 1983, a total of 181 societies have been registered. There is a total membership of 15,924 growers in 1533 villages. These growers cultivate 54,230 hectares of oilseeds.

Three hundred demonstrations have been completed in farmers' fields and average yields in these demonstrations ranged from 1 to 1.6 tonnes per hectare. As an aside, randomised replicated yield trials conducted at Amlaha farm gave yields of 2.0 to 3.0 tons per hectare for most treatments during 1982-83.

The primary societies distributed 713.64 MT of improved seeds, 1590 kgs. of seed treatment chemicals, 980 MT of fertilisers, 36,667 kgs. of insecticides and fungicides along with 15,665 packets of rhizobium inoculum.

No original targets were set for amounts of production inputs to be distributed, but the amounts have been growing steadily.

Applied Research and Development Centre: It must be noted that Madhya Pradesh has proposed the establishment of an Applied Research and Development Centre that would be in addition to the planned Area Agronomic Centres and District Demonstratio Farms. The stated reason for the establishment of this facility is that "the quantum of research being done in Madhya Pradesh is considered to be not adequate and location specific".

Special attention would be given in these centres to applied research and development in the areas of production, processing and utilisation. The total cost to the project is estimated at 13,625,000 rupees.

Area Agronomic Centre: It is proposed that an Area Agronomic Centre of 500 ha. be set up near the site of the soybean processing plant at Ujjain. The proposed transfer of the government farm of 103 ha. at this location would provide the core of this centre. Additional land, which is available, could be added to this farm to make up an area of 400-500 ha. This centre would be used for applied research, training of mobile teams and farmers and for seed multiplication. The mobile teams would work out of the area agronomic centre. The transfer request by the federation is under consideration by the state government.

District Demonstration Farm: Under the original definition of a district all of the revenue districts in the soybean growning area are lumped into one project district. This then implies only one district farm for the area. At present a farm of about 70 hectares has been transferred by the state government to the federation. Substantial improvements have been made on this farm and it is now serving as a District Demonstration Farm. It was taken over by the federation in December, 1980 and two good crops of kharif soybean seeds have been produced.

Mobile Teams: Madhya Pradesh made a major modification in the mobile team concept. They have a Regional Manager for Cooperatives and Extension who is with federation level management and is responsible for district level production enhancement activities. The District Manager is responsible for all operations in this district. Cooperative formation officers and agricultural officers are under his jurisdiction. Teams of Field Supervisors and Field Assistants working under the cooperative and agricultural officers are responsible for the day to day operations in the villages. A mobile team is working in each of Indore, Dewas, Dhar and Ujjain Districts.

Production Enhancement Inputs: Madhya Pradesh has put strong emphasis on an improved seed programme. They are not only attempting to improve the purity and germination of the seed but they are multiplying the best bold seeded yellow varieties. Three seed processing plants have been established with good storage

facilities. Seed is being cleaned, graded, bagged and stored under fairly good conditions. Improvements need to be made in the storage facilities but these problems are recognised and they are working on solutions.

Aside from seed, seed treatment and inoculation have been worked on as the principal and overriding problems in increasing unit area yields. This is a very sound approach to the problem. Expensive inputs in fertilizers and pesticides should only be used after there is a proven ability to establish a good plant stand. In the past two years the movement of pesticides and fertilizers through the cooperative societies has increased.

Lessons Learned

In Madhya Pradesh it appears that production enhancement work started off on a sound footing. High priority was given to providing high quality seed of improved yellow-seeded varieties. In spite of some advantages of black-seeded varieties, de-oiled cake from these varieties would be difficult to market due to the color.

The test plot work being done in weed control indicate that weeds are a major problem in rainfed soybean production. Fortunately the higher average rainfall in this area removes the most serious production constraint. Thus, higher levels of inputs including

pre-emergence weedicides can be justified. In the demonstration conducted on farmers field it has been conclusively proven that yields of 1 to 1 1/2 tons/ha. can be achieved with a fairly modest package of practices.

It appears that the technology is in hand and the staff in place so that when processing facilities come on line the supply of raw materials should not be a problem if procruement is conducted with great vigor.

Problem/Issues

The biggest problem that can be identified at this time is with the handling and storage of seed. At Indore seed cleaning and grading was being done very well. The seed going into the sack is a good looking product. Unfortunately the handling and storage left something to be desired. The bag stacks greatly exceeded acceptable limits and the stacks were set up manually which means that many of the stacks were exposed to at lot of foot traffic.

Recommendations

A concentrated effort to improve seed storage for the preservation of seed viability should be investigated.

Accomplishments to date - Tamil Nadu

Tamil Nadu has proposed to have 500 oilseed growers societies with 1,48,000 farmer members and with an area of 1,75,000 hectares in groundnut production by the end of the project, 1987-88. They are targeting an annual procurement level of 1,36,000 tons. A yield increase of 230 kgs. per hectare is projected by the end of the project.

Due to a prolonged drought in the area, implementation has been slow. Work started in July 1981 and 20 societies had been organised by the end of the year. By April 1983 100 societies had been formed. The societies have a total of 6,543 members in 398 villages. There are 9,350 hectares of groundnuts grown in the area covered.

The federation in Tamil Nadu, after surveying several possible sites, has chosen the Vellala Vidhthi Oilseed Farm as a suitable site for the Area Agronomic Centre. The farm has an area of 274 hectares and is located in Pudukottai district. The federation has requested the release of this farm for the establishment of the Area Agronomic Centre.

District Farms: The federation has identified the Government Oilseed Farms of Puttur and Mussaravakkan for the establishment of district farms. Mussaravakkam is a farm of 62.5 hectares and has been transferred to the federation by the state government. It is now in full operation producing foundation seed of improved varieties. Because it is fully irrigated it can produce three seed crops per year.

Mobile Teams and Extension: The Spearhead Team from NDDB that did the first work in the formation of cooperative societies now has six members, four are assistant executives and two are extension workers. Two other teams have been formed that are now engaged in society formation and survey work. At the end of April, 1983, 100 cooperative societies had been registered and this work appears to be progressing smoothly.

Production Inputs: As against an end of project proposal to cover 20% of the area with improved seed by the end of the project, a goal of 2% will be attempted this year. Initially, the federation utilised the facilities of the Directorate of Oilseed for procurement and distribution of seed. Now the federation is permitted to extend the subsidies directly to society members and claim reimbursement from the directorate. This allows direct, timely service to society members and relieves them of the red tape involved in claiming subsidies.

The federation has procured 160 tons of truthfully labelled seed and proposes to buy an additional 100 tons.

Two hundred eighty two tons of fertilizer have been distributed through these newly formed cooperative societies. It must be remembered that other agencies, both private and public, are in the area distributing crop production inputs. In a mass spraying programme 2682 hectares belonging to 2646 members were covered. 3,500 litres of plant protection chemicals were used. Extension efforts have been pursued using approved extension methods and training programmes.

Implication of Achieving End of Project Goals

There has been a three year drought in this area that has substantially reduced crop yield and consequently farm income. Many farmers have not been able to join the cooperative societies because of the 50 rupees share capital requirement. In view of the progress that has been made in spite of this constraint the prospects appear bright for achievement of the end of the project goals. As of April, 1983 only one year and nine months had passed since the first spearhead team started to work. With the return of normal rainfall conditions to the area and the continuation of present work effort the end of project goals should be achieved in the production enhancement work.

Problems/Issues

The principal problem for the federation in Tamil Nadu is the record breaking drought conditions that exist in the area. The importance of this completely overrides consideration of any other problems.

Recommendations

Due to the extended drought conditions and the short programme time, it is not possible to make any meaningful judgements and, consequently, recommendations in the production enhancement area. The need for lowering requirements for field staff qualifications is a disturbing development in the production enhancement work. This increases the need for a highly qualified person at the PhD. level in the federation management. The proper persons in this position could provide the following functions:

(a) Liaison between research organisation and project extension personnel.

(b) Coordination between production and processing.

(c) Supervision of mobile team activities.

(d) Direction for applied research, demonstration and extension training.

Progress in Organizing Cooperative Societies

Objectives of the project are to be achieved through a cooperative organization based on the Anand Cooperative Pattern. Production, processing and marketing are to be integrated into a cooperative structure owned and managed by the oilseed growers. NDDB, through its Oilseeds and Vegetable Oils Wing (OVOW), assists each participating state to organanize grower's cooperative societies and a state federation and helps to create the supporting infrastructure for a viable operation.

In each state the NDDB and the state government must agree on the by-laws of state level Oilseeds Growers Federations and the village level cooperatives, project area, nomination of chairman, and appointment of managing director of the federation. The state government also agrees to guarantee the repayment of loans and advances by NDDB to the federation, exempt the sale of donated oils in the project from tax, and make available land for district farms and agronomic centres.

Democratic cooperative principles were incorporated into society and federation charters. Provision was made to relinquish NDDB/OVOW control and oversight to the farmer members of the societies as soon as they have learned sufficiently to assume control and continue viable operation. Federation model by-laws provide for the

constitution of a consultative committee composed of seven farmers for each district which would advise the federation on matter pertaining to production, procurement and technical inputs in their districts.

End of project organisational goals are shown in the appendix tables III D (1) and (2). Initiation of the project was delayed for almost one year due to insufficient funds for start up because of the late arrival of the donated oil. However, excellent progress has been made on the establishment of state federations and village societies. Four of the projected five state federations have been formed. Three of the five states have formed 1253 village level societies with 90,571 members in six districts. Work is to start in the other two states in the very near future.

1) Gujarat: The NDDB initiated a vegetable oil processing scheme by purchase of an oilseeds processing plant in Bhavnagar. The process of negotiations for the facility and subsequent registration of cooperatives stimulated the state government to set a policy which reserved for the cooperative sector new additions of processing facilities. By-laws formulated for the Gujarat Oilseeds Growers Cooperative Federation became the model for other states. Likewise, village level oilseeds growers cooperative society by-laws in Gujarat became the model for the project in all states.

The Gujarat Oilseeds Growers Cooperative Federation was formed in June, 1979. By March, 1983 the federation, with NDDB assistance, had organized 978 village level cooperative growers societies, membership was 69,707 farmers, with land area of 316,987 hectares. Organizational goals were substantially mete with the exception of membership per society.

GROFED is now beginning to act as an independent entity as envisaged by its founders but still retains needed organizational, policy, and management expertise of NDDB/OVOW. GROFED has assumed responsibility for the administration of the special groundnut project of the Government of India within the oilseeds project districts. This program provides subsidy to farmers for use of recommended inputs in production of groundnuts to promote the adoption of production enhancement practices.

2) Madhya Pradesh: The project in MP is confined to soybean producing districts. Initial organisation of local cooperative societies was done by the NDDB/OVOW spearhead team and, upon staffing of the federation, steady progress has been made. Almost 16,000 farmers have been organized into 181 societies in 1533 villages. The state government appointed the federation as implementing agency for all oilseeds development programs in the cooperative sector. The federation has also taken on responsibility for the National Cooperative Development Corporation's project to set up four soybean processing plants in the state. This activity is outside the scope of the oilseeds project being evaluated. The

federation has initiated most of the activities required to achieve project goals and is making progress toward their attainments. Federation work is conducted by two divisions: Institutional Development and Production Enhancement. These divisions help formulate policy and direct project implementations. Four mobile teams now work out of area offices in the district under division supervision.

3) Tamil Nadu: Charter board members of the Tamil Nadu Cooperative Oilseeds Growers Federation (TANCOF) were all state government officials except for NDDB representation.

Provision for management and policy control of the federation was also vested initially in the state government.

4) Andhra Pradesh: A Cooperative Oilseeds Growers Federation has been registered but operation has not been started. An IAS officer has been named managing director and project implementation should soon be underway aided by NDDB spearhead teams.

5) Karnataka: Project establishment is in the discussion stages among NDDB/OVOW and the state government. OVOW anticipates project start by November 1983.

Issues and Recommendations:

Maintaining the interest of farmers to support their society and the federation along with the training to give them the abilities and confidence to assume higher leadership roles will need increasing attention as the time nears for election of federation board members.

Project goals were to obtain significant enrollment in the village societies from the small farm sector. Average numbers of members per society ranges from 52 in Tamil Nadu to 88 in Madhya Pradesh. Examination of records indicates that membership grows with time and the late adopters generally are the smaller farmers. Data is available only for Gujarat where the project has been underway the longest time. In Gujarat average holdings are 4.38 ha. for society members compared to all farmers holdings of about 5 ha. Most fall in the medium size group. Clearly, considerable progress can be expected as the societies grow older.

Consultative committees have been formed in the districts of Gujarat but not in the other states. Formation of such committees in all federations would provide growers with representation in development of federation policies and give them valuable experience for assuming board membership responsibilities when the five year terms of appointed board members expire.

TABLE - COOPERATIVE ORGANIZATION GOALS (END OF PROJECT)

	Gujarat		Madhya Pradesh		Tamil Nadu		Andhra Pradesh		Karnataka*		Project	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
District	4	4	1	1	1	1	1	1	1	1	8	8
Societies	1223	1273	200	250	450	500	280	330	280	330	2433	2683
Villages	1834	1909	2000	2500	2250	2500	1018	1200	1018	1200	8120	9309
Members (000)	161	168	100	125	157	174	84	99	84	99	586	665
Members are (000)ha	442	460	181	226	126	140	84	99	84	99	917	1024
Mobile Teams	61	63	10	12	23	25	14	16	14	16	122	132

*Tentative - Source: NDDB/CLUSA Oilseed Growers' Cooperative Project Multi-year Operational plan (1979-86) Page 59 + 105

Note: Figures for CUC assisted part of the project excluded.

TABLE - PROJECT ACHIEVEMENTS IN COOPERATIVE ORGANIZATIOIN AS ON MARCH 31, 1983

Item	Gujarat	Madhya Pradesh	Tamil Nadu	Project
Districts	4	1	1	6
Societies	978	181	94	1,253
Villages	1,256	1,533	328	3,117
Farmer members	69,707	15,924	4,940	90,571
Land Area of Members (ha)	3,16,987	1,05,109	8,735	4,30,831
Mobile teams	34	4	1	39

roject targets and achievements (Up to 31 March, 1983) in respect of production
nhancement inputs supply and distribution to grower members of the Society by GNOFED in Gujarat

r. o.	PROJECT YEARS										
	1st (1979-80)		2nd (1980-81)		3rd (1981-82)		4th (1982-83)		5th (1983-84)	6th (1984-85)	7th (1985-86)
	Targets	Achievements	Targets	Achievements	Targets	Achievements	Targets	Achievements	Targets	Targets	Targets
. Members area under ilseeds (000'ha)	66.51	-	132.1	-	218.3	-	322.3	229.4	460.4	592.7	592.7
. Area covered under in-ute programe (000'ha)	18.8	N.A.	42.1	N.A.	81.2	N.A.	140.0	-	229.0	346.6	347.6
. Seed (MT):											
a) Breeder	-	-	10.0	-	22.0	-	41.0	-	60.0	110.0	165.0
b) Foundation	-	-	80.0	-	184.0	-	360.0	-	616.0	1016.0	1544.0
c) Certified/Truthful	-	125.0	2632.0	104.1	5894.0	1136.9	11368.9	950.0	19600.0	320.60	48664.0
. Rhizobium Culture 000' packets)	-	-	188.0	2.1	345.0	8.7	787.0	1520.0	1234.0	1978.0	2961.0
. Fertilizer (MT)	-	-	1688.0	2.0	3553.0	703.8	6632.0	4622.0	11106.0	17800.0	26666.0
. Pesticides:											
a) Insecticides (kg/lit)	-	-	-	3165.5	-	42936.4	20000.0	39692.0	-	-	200177.0
b) Fungicides (kg/lit)	-	-	5000.0	-	12000.0	2794.0	24000.0	7309.0	42000.0	68000.0	103000.0
. Seed Treatment hemicals (kg)	-	3.5	648.0	206.0	14170.0	9464.0	274700.0	3772.0	47690.0	79010.0	1199880.0
. Plant Protection quipment (Nos.)	-	-	-	-	-	10975	-	3086	-	-	-
. Farm implements (multi-urpose seed drill) (Nos.)	-	-	-	-	-	894	13450	775	-	-	-
0. Sprinkler sets (Nos.)	-	-	-	-	-	10	-	47	-	-	-
1. Soil sample analysed Nos.)	-	-	-	-	-	-	-	10783	-	-	-

.A. Not available. It is assumed that targets are achieved in full.
OURCE: NDDB/GVOW Documents

BEST AVAILABLE COPY

Project targets and achievements (Up to 31 March, 1983) in respect of production enhancement inputs supply and distribution to grower members of the Society by OILFED in Madhya Pradesh

Sr. No. Particulars	PROJECT YEARS 1st (1980-81) Targets	1st (1980-81) Achievements	2nd (1981-82) Targets	2nd (1981-82) Achievements	3rd (1982-83) Targets	3rd (1982-83) Achievements	4th (1983-84) Targets	5th (1984-85) Targets	6th (1985-86) Targets	7th (1986-87) Targets
1. Members' area under oilseeds (000' ha)	4.0	N.A.	22.0	19.7	63.0	52.23	140.0	201.5	237.2	249.2
2. Area covered under inputs programme (000' ha)	-	-	-	N.A.	-	N.A.	-	-	-	-
3. Improved seed supply (MT)	-	-	2200.00	412.0	1600.0	714.0	11800.0	18100.0	22600.0	25000.0
4. Rhizobium culture (packets)	-	-	-	4787.0	40000.0	15665.0	-	-	-	
5. Fertilizer (MT)	-	-	-	1050.0	-	980.0	-	-	-	
6. Pesticides:										
(a) Insecticides (kg/lit)	-	-	-	3580.0	30000.0	36667.0	-	-	-	-
(b) Fungicides (kg/lit)	-	-	-	5.3	-	-	-	-	-	-
7. Seed treatment chemicals (kg)	-	-	-	533.0	4000.0	1635.0	-	-	-	-
8. Farm implements (Nos.)	-	-	-	-	500.0	-	-	-	-	-
9. Soil Samples analysed (Nos.)	-	-	-	254.0	-	688.0	-	-	-	-

N.A. Not available. It is presumed that almost total area under oilseed of grower members covered under inputs programme.

SOURCE: NDDB/OVOW Documents

BEST AVAILABLE COPY

roject targets and achievements (Up to 31 March, 1983) in respect of production
nhancement inputs supply and distribution to grower members of the Society by TANEDF in Tamil Nadu

r. n. articulars	PROJECT YEARS 1st (1981-82) Targets	Achievements	2nd (1982-83) Targets	Achievements	3rd (1983-84) Targets	4th (1984-85) Targets	5th (1985-86) Targets	6th (1986-87) Targets	7th (1987-88) Targets
. Members' area under ilseeds (000' ha)	12.0	4.3	36.0	6.8	70.0	108.0	140.0	160.0	175.0
. Area covered under in-uts programme (000' ha)	3.6	•	11.0	•	22.0	35.8	55.0	76.0	76.0
. Certified seed supply MT)	40.0	29.48	1400.0	260.0	3200.0	4200.0	5600.0	6400.0	6400.0
. Fertilizer supply (MT)	-	-	2740.0	282.0	-	-	-	-	-
. Pesticides:									
a) Insecticides (kg/lit)	-	293.0	245.0	) 3500.0	-	-	-	-	-
b) Fungicides (kg/lit)	-	-	N.A.	) -	-	-	-	-	
. Gypsum (MT)	-	-	280.00	200.0	-	-	-	-	-
. Seed treatment hemicals (kg)	-	-	3300.0	-	-	-	-	-	-

.A. Not available.
It is envisaged that total area under oilseeds targets have been covered.
OURCE: NODB/OVOM Documents

BEST AVAILABLE COPY

E. Product and Process Development

The product and process development component is linked closely with market research and testing and many of the relevant issues have already been discussed in that section of the report (see Marketing Operations, Research and Testing). The purpose of this component is to provide resources to conduct technical research and development which solves problems related to processing efficiency and the development of new products which enhance the competitiveness and profitability of project marketing operations. Successful and cost-effective product and process development could play a key role in the eventual financial independence of the project by boosting marketing margins and, thus, providing funds to support the developmental activities of the Federations. NDDB's considerable experience and expertise in product and process development is likely to be of substantial benefit to the project.

The areas in which product and process development work is currently being conducted or contemplated are:

1) Rapid determination of oilseed quality for field level procurement.
2) Solar drying of oilseeds for satellite storage facilities.
3) Detection and control of mycotoxins in oilseeds such as groundnuts.

4) Alternate techniques of extracting oilseeds such as aqueous extraction systems.

5) Development of blended oils and companion legislation/regulation to permit their sale.

6) Plastic pouch packaging for vegetable oils.

7) Utilization of vegetable oil for the formulation of low cost spreads such as margerines.

8) Development of a process for partially defatting groundnuts.

9) Utilization of non-oil solids for human consumption such as dal analogs, meat extenders, etc.

10) Recovery of by-products of oil refining such as lecithins.

11) Survey of the quality of edible fats and oil products available in the open market.

12) Uses of non-edible and non-oil solids such as groundnut shells, including:

    (a) Energy generation through gasification.

    (b) Manufacturing of activated charcoal.

    (c) Brick compaction.

Accomplishments

Project expenditures on product and process development have, so far, fallen well below projected levels. The major reasons for expenditure shortfalls have been the delays and uncertainities in project implementation, problems in arranging the import of available technology, and delays in

arranging collaborative research efforts with other domestic and foreign institutions. Most work so far has focused on increasing the capacity and efficiency of processing facilities. Some product development work has been done, including preparation of samples of blended oils (progress halted because of government regulations banning blended oils), and developing small, relatively low cost, tin and plastic packaging for vanaspati, and soyabean and groundnut oil.

Exploratory work has been done on the detoxification of aflatoxin infected deoiled cakes (a new ammonia treatment process is now being used in Africa), a process for partially defatting groundnuts (removing 55-60 percent of the oil and leaving on edible groundnut), generation of electricity from groundnut hulls (to compensate for shortages of power in project processing facilities), producing margarine, and the development of dal analogs (high-protein pulse substitutes/extenders made from deoiled cakes).

Problems, Issues, and Implications

1) The revised project budget calls for a 45% increase over the original budget for project expenditures on product and process development, despite the fact that expenditures to date have been only a small fraction of

the original targets. Annual expenditures are now projected to rise sharply. The budget increase is probably justified given the expenses that are likely to be incurred in planned research and development programmes. However, it is important that the costs and benefits of various projects be carefully studied and that financial and management resources be focused on areas with the highest likely payoff to the overall project.

2) The evaluation of project marketing operations (see Marketing Operations, Research and Testing section) suggested several areas of research and development which would appear to be particularly relevant to marketing problems and have considerable potential for increasing marketing margins. These include:

(a) improved dehulling of black soybeans to improve oil and meal quality.

(b) the detoxification of aflatoxin infected oilcakes and extractions, particularly groundnut.

(c) development of dal analogs and other higher valued human foods from deoiled cake.

In addition, the development of a cost effective process for generating electricity from groundnut hulls would be very beneficial in boosting processing capacity utilization and reducing per unit costs. Another possibility might be the production of fiber board or insulation board from groundnut hulls.

The feasibility of developing cost effective processes in each of these areas needs to be studied and, if justified, accelerated research and development in these areas could have a high payoff to the project. Collaboration with foreign and domestic institutions already doing work in these areas could speed up and reduce the cost of the research and development work.

3) Product and process development efforts under the projects have run into problems with access to foreign exchange to finance imports of technology and equipment. The inability to take full advantage of existing technology can only slow the development of and, perhaps, reduce the quality of new products and processes that could substantially enhance prospects for the financial viability of the project.

4) Research and development programs, particularly collaborative efforts, take time as well as money to organize and complete. It appears likely that work and expenditures on currently planned research and development will extend beyond and currently specified end date of the project.

Recommendations

1) Product and process research and development resources available to the project should be focused on solving key marketing and processing problems having the highest likely payoff in terms of the long term financial viability of the project. These problems would appear to include increasing the value and marketability of oil cakes and extractions, and finding higher valued uses for non edible by products.

2) Constraints on the availability of foreign exchange and, therefore, access to technology available elsewhere in the world should be eased by any means possible. An increase in foreign exchange funding and/or entry into collaborations/joint ventures with foreign companies are possible options.

F. Manpower Development

Successful implementation of the project will require large numbers of well trained people. OVOW has been able to fill some of the key posts in the federations with highly qualified persons experienced in NDDB operations but special training and orientation programs are required for most of the staff. The project strategy is to recruit large numbers of young graduates to form the mobile teams, which are the project's initial link with the growers, and give them special training programs, emphasising on-the-job learning. Training programs are also arranged for managers and supervisors and the professional and technical staff of the projects' processing facilities. Farmers representing each of the grower co-operative societies are included in a special program to prepare them for leadership positions in their societies.

The original budget allocation for manpower development was 30.0 million rupees over the seven year life of the project. At this time (end of March 1983) 6.7 million rupees have been used - just 41 percent of the project targets for 1982-83. The shortfall is due primarily to the delay in start up of some of the federations. Karnataka and Andhra Pradesh federations have not yet begun organisation and staffing. Gujarat and Mahdya Pradesh federation began functining only in 1980-81 and the Tamil Nadu federation began only in 1981-82.

Experience during these first years has shown the need for more training and the federations are stepping up their programs. The budget has been revised from the original 30 million rupees to Rs. 54.198 million (low) or 65.768 million rupees (high) for the life of the project.

Following are the original targets in term, of persons in each category to be trained in each of the seven project years:

	PY1	PY2	PY3	PY4	PY5	PY6	PY7
Managerial	70	170	180	215	275	295	295
Supervisory	200	450	490	900	920	1,030	1,250
Extension	30	170	300	460	650	800	800
Village representation	300	1,700	4,400	7,600	11,100	14,500	16,000
Administrative & other	300	780	900	1,300	1,500	1,700	1,900
Skilled labourers	140	310	370	870	990	1,180	1,440
Unskilled	1,700	8,900	22,400	39,500	57,000	74,200	82,000
HPS Sorters*	15,150	30,300	45,450	60,660	75,750	90,900	106,050

* This category has been suspended because of present Government of India policy restricting export of HPS groundnuts.

The manpower development programs have focussed primarily on the first five categories but special programs are also intended for many of the laborers. Following are the training achievements up to March 1983 in terms of man-months of training for each category:

Managerial	147.5	Man-months
Supervisory	11.0	"
Extension	78.0	"
Village representation	767.0	"
Administration & other	13.50	"

Following is a break-down of the number of persons trained under various programs, at Anand and within the federations, up to March 31, 1983:

Program	Gujarat	M.P.	Tamil Nadu	Orissa	Total
At Anand:					
Procurement and Inputs	75	8	23	15	121
Farmer Induction	184	461	110	24	779
Management Information Systems	7	6	16	18	47
At Federations:					
Society Secretaries	299	263	83	0	645
Management Information Systems	250	36	0	0	286
Farmer Induction	7,797	2,264	417	-	10,478

The revised phase II budget for manpower development shown in Appendix III F reflects the need for a more ambitious training program designed to meet the requirements of different categories of the federation work force.

The Gujarat Oilseed Federation (GROFED) is establishing two "Macro-Centers" in each district for field training of GROFED staff and society secretaries. It is conducting short (3 day) training programs for the chairmen and executive committee members of

societies to develop responsible leadership at the village level. The Madhya Pradesh Co-operative Oilseeds Growers' Federation has organised a comprehensive manpower training program with emphasis on the grass root level workers who deal directly with grower co-operatives. The federation staff conducts formal training programs for the mobile teams under which 178 team members have been trained. The federation is establishing a Regional Training Centre for training of grower members as well as mobile team members.

The Tamil Nadu Co-operative Oilseeds Growers' Federation (TANCOF) has had difficulty recruiting staff. Some key federation positions have not been filled (some are being filled temporarily by Department of Agriculture's staff members on deputation). The federation had hoped to recruit extension assistants with a minimum qualification of SSLC Pass in the 2 years course in agriculture, but were able to recruit only 3 candidates. Since an adequate number of candidates with those qualifications could not be recruited, qualification criteria were modified to include II Class graduates in Science and Arts, with preference for candidates with 2 years experience in agriculture extension. While this is expected to provide sufficient numbers more formal training in agriculture will be necessary if these are to perform satisfactorily.

The Tamil Nadu Cooperative Oilseeds Growers' Federation began the formation of growers' cooperative societies only in 1981-82, after training of local mobile unit staff with assistance from NDDB

spearhead teams. Training programs for farmer leaders is just now getting underway. The federation has taken full advantage of the training program offered by NDDB at Anand with twenty three staff members participating in the 40 day program on procurement and inputs and sixteen staff members attending the two day course on the Management Information systems.

Lessons Learned

Inability of the federations to recruit persons with adequate education and training for the society secretary position has created problems. Many of the secretaries are not able to prepare required reports adequately and provide the necessary services for the societies. This has been the case particularly in Gujarat where a major effort was made to introduce the management Information Systems (MIS). As a result area staff who have responsibilities for extension and supervision must devote much of their time to data collection and have insufficient time to devote to their principal duties. The ratio of extension officers to co-operative growers is very small in all states. Further, since it has been necessary to recruit candidates without formal training in agriculture, this part of the staffing of the federations appears quite inadequate.

It has been found that non-agricultureal graduates can be trained to work effectively as supervisors and extension specialists in the

mobile teams. At the same time, it has become clear that agricultural graduates need additional formal and on-the-job training to orient them toward the commercial aspect of these federations.

Recommendations:

(1) If well qualified society secretaries cannot be recruited, those recruited should be given adequated training to perform their functions with a minimum of supervision or assistance from the extension staff.

(2) The number of mobile units need to be increased and each mobile team should be staffed with at least one qualified agriculture graduate.

(3) Where it is necessary to staff agricultural positions with non-agricultural candidates intensive formal training in agricultural subjects should be arranged for them.

(4) The agriculture extension workers need strong technical backstopping from a federation and/or district level agriculture staff in order to keep them well informed on adapted technology.

APPENDIX III F.

Phase II Manpower Development Objectives

Description/Unit	PY4	PY5	PY6	PY7
Managers/Professionals:				
Number (cummulative)	75	90	100	125
MM Formal Training	42	45	60	45
MM on Job Training	84	90	120	90
Mobile Team Leaders:				
Number (cummulative)	55	90	125	155
MM Formal Training	21	35	35	30
MM On Job Training	42	70	70	60
Coop./Agriculture Specialists:				
MM Formal Training	80	120	160	200
MM on Job Training	-	-	-	-
Society Supervisors:				
Extension Assistants:				
MM Formal Training	270	180	240	300
Administrative Support Staff:				
Total number (cummulative)	1,520	1,930	2,605	3,260
Number (OVOW) (cummulative)	40	50	55	60
Number federations (cummulative)	80	100	150	200
Number societies (cummulative)	1,400	1,800	2,400	3,000
Society Secretaries:				
Number (cummulative)	1,100	1,800	2,500	3,100
MM Formal Trainees	1,100	2,100	2,100	1,800
MM On Job Training	2,200	4,200	4,200	3,600
Processing Facility Supervisors:				
Number (cummulative)	120	200	320	480
MM Formal Training	180	240	360	480
MM on Job Training	360	480	720	960
Grower Demonstrations:				
Number	2,000	4,000	6,000	8,000
MM Formal Training	1,000	1,000	1,000	1,000
Labourers:				
Number (cummulative)	1,500	2,500	4,000	6,000

G. Project Management and Implementation

The establishment of an Oilseeds and Vegetable Oil Wing (OVOW) within the National Dairy Development Board (NDDB) as project authority was envisioned in the original project document "Restructuring Edible Oil and Oilseed Production and Marketing". The responsibilities of OVOW include handling and marketing of donated commodities received under the project, disbursement of funds, and implementation of the project.

The project is to be implemented in selected oilseed growing states through state level cooperative oilseeds growers' federations established by the concerned state governments on the advice of OVOW. The responsibilities of the federations include:

(a) formation of village level oilseeds growers' cooperative societies;

(b) organization of procurement operations and implementation of technical input programs for increasing oilseed production through oilseed growers' cooperative societies;

(c) processing of oilseeds;

(d) marketing of oil and by-products, etc.

The concerned State Government must agree to set up an oilseed grower's federation based on the model by-laws recommended by

NDDB/OVOW and also take various steps essential for registration of single commodity cooperative societies at the village level. A federation is first established with a nominated Board for an initial term of five years. It is planned that during the period of operation of the nominated board, village level cooperative societies will be formed in sufficient numbers that the chairmen of the village level cooperative societies would eventually form the electoral college for the election of the members of the board of the federation. During the period of the nominated board, a consultative committee of farmer representatives selected from among the chairmen of the village level societies functions to provide a more direct link between the producers and the nominated board of the federation.

NDDB/OVOW must work in close cooperation with the donor agencies, State and Central Governments, and various other agencies on all aspects of project implementation. OVOW depends on other divisions of NDDB for various technical skills such as engineering, planning, farmer's organisation, applied research and development and manpower development, and for service functions including accounts, purchasing, administration, and computer services.

After the creation of a network of strong single commodity oilseed growers' cooperative societies and their federations in the participating states, it was planned to establish a National Federation of Oilseeds Growers. OVOW may provide the core staff required for the setting up of the National Federation.

Accomplishments:

The state level oilseeds growers' federations have so far been formed in five out of the seven states approved for inclusion in the project by the Government of India. There have been considerable delays in initiating project implementation in Karnataka and Maharasthra. In the case of Andhra Pradesh, although a state level oilseeds growers' federation was established two and one half years ago, it has been brought on stream only very recently.

The start up of the project in different states has not been according to the schedule included in the original project document. Delays have occurred because of initial reluctance on the part of state governments to implement the project along cooperative lines as originally planned (in the case of Karnataka), and procedural delays in sorting out various issues relating to the adoption of the model by-laws recommended by NDDB/OVOW (in the case of Andhra Pradesh and Maharashtra). It is expected that these state federations will become fully operational during 1983-84.

Uncertainties as to whether the project would be able to obtain the committed support from the donor agencies have also forced NDDB/OVOW to adopt a more cautious approach in starting up operations in new states; instead some efforts were made to consolidate the gains achieved in states such as Madhya Pradesh where the project was initiated from the start.

Uncertainties and delays in project implementation have also prevented the expansion of OVOW staff to provide more support to the federations. With the appointment of an Executive Director in January 1983, plans are now under way to expand OVOW. OVOW will continue to be responsible for handling and marketing donated commodities, project finance, and monitoring. Technical and support services required by the federations, including planning, engineering, purchase of equipment, computer services, etc. will continue to be provided by the concerned divisions of NDDB.

Problems and Issues:

1) The original project document "Restructuring Edible Oil and Oilseed Production and Marketing" approved by the Government of India in September 1978, envisaged generation of funds at Rs. 5,500/MT landed value for donated vegetable oil. The first CLUSA Multiyear Operational Plan approved by USAID also envisaged generation of funds at the same rate. Both these documents form a part of the agreement entered into between NDDB and CLUSA under which NDDB is to receive 160,000 MT of edible oils from USAID/CLUSA over the seven year project period.

   There are some differences in the budget estimates provided in the two documents mentioned above. The NDDB vegetable oil project provided for the creation of a sinking fund of Rs. 277.5 million to be used mainly to make good the losses the project may incur during implementation. It also provided flexibility

to the project authority for the use of such funds for project purposes in addition to the seven line items. The first CLUSA Multiyear Operational Plan, however, did not have a provision for a sinking fund. The funds earmarked for a sinking fund were instead included in the budget for the grower organisation and technical inputs line item. The Plan made no provision for the estimated income from area agronomic centres and district farms or for a technical input fund.

Such differences in the two documents describing the same project, and the fact that the actual generation of funds from the sale of donated commodities is higher than the originally envisaged

Rs. 5500/MT, created misconceptions which resulted in series of discussions at various levels between CLUSA, NDDB, and USAID. Incidentally, the Transfer Authorization executed between AID and CLUSA for the gift of 117,500 MT of edible oil incorporates the above two documents by reference.

Audit of the project by US Auditors also became a point of issue and numerous discussions were held at various levels to sort these out. In October 1982, NDDB/OVOW was assured that a final agreement had been reached on these issues. By that time there had been four more versions of the CLUSA Multi-Year Operational Plan. The present plan, prepared by CLUSA in consultation with NDDB, which is to be the basis for the midterm evaluation of the

project, is in fact the fifth version of the Multi-Year Operational Plan. Within less than four years of the launching of the project, assuming the start up date as the date of arrival of first gift shipment, about 120 man-months of OVOW staff time was utilised on working towards the resolution of these issues and the preparation of plans. This does not include the time spent by NDDB top management. CLUSA and USAID also spent considerable time working towards resolution of these issues and the preparation of plans. Now, in the final week of this evaluation exercise, NDDB/OVOW has been informed that the issues have not, in fact, been resolved to AID's satisfaction. The negative impact on orderly implementation of the project is obvious. AID needs to give highest priority to correcting this seriously disrupting situation.

2) There must be a clear delineation of the respective roles of AID and CLUSA in the project. It is recommended that CLUSA have sole responsibility for monitoring project progress, providing necessary assistance in matters relating to project implementation, and furnishing all information needed for USAID/Delhi to fulfill its reporting requirements. USAID/Delhi's role would be to ensure that CLUSA has sufficient resources to carry out these functions.

3) The original project document lists 1977/78 as a pre-project year during which 10,000 MT of edible oil was planned to have been received as gift. The first gift shipment, however,

arrived in June, 1979. The total quantity of edible oil received from July 1979 to June 1980 was 49,369 MT as against 77,500 MT originally scheduled to have been received. Also about 90,000 MT of edible oil expected from other donor countries was not received. Funds for project use therefore became available only sometime in March/June 1980, as it took some time to arrange the sale of the refined soybean oil. Project year "one" should therefore be taken as 1980/81. NDDB, however, had undertaken a number of pre-project actions and this largely helped initiation of the project without much loss of time. The project achievements indicated as of March 1983 are therefore the result of the pre-project actions and the work done during 1980/81 through 1982/83, i.e., three years.

4) The relationship between OVOW and the state level federationsis clearly defined in the model by-laws:

(a) NDDB/OVOW can hold upto 51% paid up share capital of any state level oilseeds grower's federation;

(b) The Board of Directors of each of the federations has 3 NDDB/OVOW nominees as members;

(c) As long as NDDB/OVOW holds 51% of the shares of the federations, it can give directions, in writing, which will have to be accepted by the Board of Directors;

(d) The Chairman and the Managing Director of each federation are appointed by the State Governments in consultation with NDDB.

The most critical problem that has so far been faced in these arrangements relates to the appointment and continuance of Managing Directors of federations. There have been frequent changes at the Managing Director level in each of the federations which have deprived the federations of continuity in leaderhsip during the formative stages of their development. This has occurred particularly when Managing Directors have been appointed from the Indian Adminstrative Service (IAS). While IAS officers have been of considerable help in sorting out procedural and administrative problems within the state governments during the early stages of the project, the frequent changes at the Managing Director level have probably slowed the development of financially viable federations.

5) The organizational structures which have evolved in the state federations are different. The differences are related to the degrees of NDDB and state government participation and sources of funding. There are a number of potential managerial problems inherent in the structures of the federations and, while no problems may exist at this time, these problems may eventually emerge. The following is a review of the organizational structures and potential problems in each federation:

(a) In Gujarat, the ultimate authority is a Board of Directors appointed by the State Government, consisting of three NDDB nominees, three State Government officials, and four farmer representatives. The Federation's Chairman is appointed by

APPENDIX III F.

Phase II Manpower Development Objectives

Description/Unit	PY4	PY5	PY6	PY7
Managers/Professionals:				
Number (cummulative)	75	90	100	125
MM Formal Training	42	45	60	45
MM on Job Training	84	90	120	90
Mobile Team Leaders:				
Number (cummulative)	55	90	125	155
MM Formal Training	21	35	35	30
MM On Job Training	42	70	70	60
Coop./Agriculture Specialists:				
MM Formal Training	80	120	160	200
MM on Job Training	-	-	-	-
Society Supervisors:				
Extension Assistants:				
MM Formal Training	270	180	240	300
Administrative Support Staff:				
Total number (cummulative)	1,520	1,930	2,605	3,260
Number (OVOW) (cummulative)	40	50	55	60
Number federations (cummulative)	80	100	150	200
Number societies (cummulative)	1,400	1,800	2,400	3,000
Society Secretaries:				
Number (cummulative)	1,100	1,800	2,500	3,100
MM Formal Trainees	1,100	2,100	2,100	1,800
MM On Job Training	2,200	4,200	4,200	3,600
Processing Facility Supervisors:				
Number (cummulative)	120	200	320	480
MM Formal Training	180	240	360	480
MM on Job Training	360	480	720	960
Grower Demonstrations:				
Number	2,000	4,000	6,000	8,000
MM Formal Training	1,000	1,000	1,000	1,000
Labourers:				
Number (cummulative)	1,500	2,500	4,000	6,000

the State Government in consultation with NDDB and reports directly to the Board of Directors. The Managing Director of the Federation is also selected by the State Government in consultation with NDDB and reports to the Chairman. In Gujarat, both of these positions have been filled by NDDB/IDC officials on deputation. The remainder of the organizational structure consists of General Managers with specific areas of responsibility (commercial, procurement, etc.) and who, in turn, have districts, area officers, and village societies reporting to them. In Gujarat, each of the key managerial positions, through the General Manager, are also filled by former NDDB personnel. At the grass roots level, the Federation, taking advantage of NDDB's considerable experience and expertise in this area, has organized a system of providing technical inputs, extension services and marketing channels for the farmer members.

The major potential problem would appear to be the extent to which NDDB and the Federation, in an effort to provide a service network owned and operated by the farmers, are perceived to be establishing services which are parallel to, and in competition with, services currently being provided by the State Government. While the intent of the Federation is to complement State Government services, there would

appear to be potential for competition and conflict. There has been a complementary relationship, so far, with the State Government providing a series of services, including subsidies for seeds, plant protection eqiupment, etc. through the federation.

(b) In Madhya Pradesh there is a somewhat different organizational arrangement. A Board of Trustees is at the top. The Chairman is a State Government official (the Agricultural Production Commissioner) and the Managing Director is an IAS officer from the State Government. The rest of the organizational set up is similar to Gujarat, with positions from the General Manager level down to the grass roots level filled with NDDB or NDDB-trained personnel.

A potential problem with this structure is that the policies of NDDB/OVOW, and the policies of the Chairman and Managing Director whose loyalties are to the State Government, may clash and inhibit the development of a financially viable federation. There could also be a problem with a division of loyalties between staff with State Government backgrounds and those with NDDB backgrounds. A related potential problem is that NDDB/OVOW may face problems in making personnel changes which it feels necessary.

Another potential management problem characteristic to the Madhya Pradesh Federation may be disagreements over the disposition of Federation resources. The Madhya Pradesh Federation receives funds from the State Government and the National Cooperative Development Corporation as well as NDDB/OVOW.

(c) The organizational structure of the Tamil Nadu Federation is similar to that of the Madhya Pradesh Federation. The Chairman of the Board of Directors and the Managing Director are State Government officials, with NDDB and NDDB-trained personnel filling positions from the grass roots level through the General Manager level. The potential problems of NDDB/OVOW and State Government policy clashes, and of State Government and NDDB personnel working at cross purposes, are the same as in the Madhya Pradesh Federation.

6) The Government of India has recently announced formation of The National Oilseeds and Vegetable Oil Board. The stated objectives of the board, it is understood, are in some respects similar to those of this project. While this may augur well for the acceptance of the basic strategy of this project in developing the oilseed sector, it should be ensured that this project, being implemented on the basis of an arrangement agreed upon earlier and having the approval of the Goverment of India, is not disturbed. Further delays in project implementation

stemming from a reorganization of project authority and financing would only jeopardize the success of the project. (Note: During the team's briefing of the Ministry of Agriculture at the end of the evaluation this point was discussed. The additional Secretary who chaired the meeting assured the team that the creation of a proposed National Oilseeds and Vegetable Oil Board would in no way affect the structural or operational aspects of the project, which would continue under the direction of NDDB as at present.)

7) The need for growers' organizations to own and operate their own processing facilties in order to obtain the financial benefits of vertical integration is a basic assumption of the project. So far, the project has attempted to analyze the relative benefits of both new and existing processing facilities on a case by case basis. The objective is the acquisition of processing facilities which are the most economically attractive in the long run to the farmer members. In general, it is felt to be important for the growers' organizations to have a technological advantage over the competition. The setting up of new processing units and introduction of new technology, including the capacity to produce new products, is felt to be necessary to some extent, not only to the financial viability of the growers' cooperatives, but also for the general improvement of the oilseeds sector.

Local Indian laws and regulations, as well as Government policy on creation of oilseeds processing facilities, are rather cumbersome, and it is difficult to obtain licenses for setting up new processing plants. One reason for this is that total licensed oilseed processing capacity in the country is more than two times oilseed production. However, much of this capacity consists of old and dilapidated plant and machinery, fully depreciated, which is really not available for processing, but valuable only for the licenses the units hold.

8) The CLUSA Multi-Year Operational Plan has proposed the provision of loans to the federations for processing facilities on the basis of 70% loan and 30% grant. The original NDDB document provides the detailed terms of financing at 70:30 with a 5 year interest free moratorium and repayment over the next 15 years. Against this, the current policy is for a 2 year moratorium during which interest accrues and is capitalized, with repayment of the capital amount and interest scheduled over an 8 year period. This policy was adopted at a time when the very continuance of the project was doubtful. The experience gained so far, however, indicates that more liberal terms of financing, i.e., interest repayments for the first 5 years with repayment of principal and remaining interest over 15 years, would be much more helpful in strengthening the state growers' organizations.

9) The state governments have not fulfilled their obligations for making available land required for establishing District Farms and Area Agronomic Centres, despite directives from GOI. It is now clear that even if the state governments do make available some land, it will not be the amount orignally envisioned. These problems have necessitated a rethinking of part of the project's production enhancement strategy in order to find effective alternatives.

10) Provision of technical inputs is one of the most important elements of the project's production enhancement program. To enable the federations to undertake such activities on a viable basis it is essential that such expenditure during the initial years of the project be provided on a 100% grant basis. Only then will the state level implementing agencies take bold steps to create the requisite infrastructure. When the procurement operations build up as a result of grower members' faith in the project, the federations will be required to set aside a technical input fund sufficient to meet the costs of operating this infrastructure.

Recommendations:

1. The audit problems which have plagued the project by creating a continual atmosphere of uncertainty regarding project funding

must be resolved as quickly as possible. The project will have little chance of meeting its objectives unless a clear and final solution to the audit issues is found quickly and the project staff can apply itself to solving substantial problems.

2. There is, furthermore, ambiguity as to AID's role in the project. As the donor agency, AID clearly has a responsibility to ensure that the donated commodities are properly handled and that the proceeds are used for the agreed upon project purposes. The project, however, was established under an agreement between NDDB and CLUSA. CLUSA, as cooperating sponsor, acts as an intermediary between AID and NDDB. Confusion arises because at times during implementation it has not been clear how much authority AID has vested in CLUSA, or when and for what purposes communication with NDDB is properly through CLUSA and when directly with NDDB. The role of each organization needs to be clearly defined and understood.

AID will require periodic reports on progress and problems from CLUSA. Inasmuch as some components of the project are supported by the Cooperative Union of Canda/CIDA, the Team suggests that CLUSA, AID, CUC/CIDA and NDDB/OVOW jointly develop a simple reporting format and system that meets minimum information needs of the donors and that can provide the information conveniently from the MIS now being introducted in the project.

3. There must be a firm commitment on the part of the state governments and NDDB/OVOW to place well qualified people in the upper level management positions of the federations, and to keep those people in their positions for at least 3-4 years. Frequent changes in leadership can only hinder the development of financially viable federations by preventing the leadership from gaining adequate expertise in the oilseed industry, by leading to frequent shifts in federation policies, and by preventing the development of a clear sense of purpose and direction among federation staffs.

4. NDDB/OVOW and the concerned state governments must continue to work together to develop a clear and mutual understanding concerning the goals and policies of the project and their respective roles in implementing the project. This understanding is necessary in order to prevent possible clashes concerning project policies and the placement of personnel, and to ensure that all parties are working together towards the same goals. Ideally, such an understanding would acknowledge the considerable experience and expertise of NDDB/OVOW in developing and managing financially viable vertically integrated cooperatives, as well as the resources and expertise available to the state governments.

5. The current organization of the project, whereby project funding is channeled through NDDB/OVOW and NDDB/OVOW is the project's management and funding authority, should not be changed even if

a decision is taken to form a National Oilseeds Development Board. The current organization allows the application of NDDB's considerable experience and expertise to the development of financially viable oilseed cooperatives under this project. Any reorganization of project authority at this point would only further delay and confuse the implementation of the project.

6. The ending dates of the project should be moved back at least 3 years (to 1989/90) because of the unexpected delays in project implementation caused by audit disputes and delays in the formation of state federations. Because of these delays it is no longer realistic to achieve the originally planned end of project goals on the original schedule.

7. Consistent with current plans, NDDB/OVOW's capacity to provide technical, managerial and planning support to the state federations should be expanded. Specific areas where NDDB/OVOW's services should be expanded include financial management and planning, operations research which assists federations in making sound investments in storage and processing infrastructure, and the provision of market information, analysis, and forecasting which supports federation marketing and pricing policy decisions. OVOW's linkage with NDDB should be maintained so that the project can continue to take advantage of the efficiencies and expertise afforded by access to NDDB's excellent technical and service divisions.

H. Federation Share Capital

The objective of the State and National Share Capital was to:

1) provide start up or "seed" money during the early stages of development for the state federation members who would not be in a position to raise adequate funds for this purpose; and

2) to provide a mechanism to ensure state federation discipline in project implementation. The OVOW purchases shares in the state federation much as a society would by paying Rs. 500 per share. To ensure control of each state federation, OVOW would purchase not less than 51% of the shares available.

There should be a NDDB/OVOW policy of relating their share capital disbursements, to a state federation, to the progress a federation makes in meeting its planned society and membership targets. In this manner, there will always be an incentive for a federation to increase and improve its membership.

During the first three years of the project OVOW has paid Rs. 32 million for share capital in the following state federations: Gujarat (Rs. 20 million), Madhya Pradesh (Rs. 7 million), Tamil Nadu (Rs. 4 million), and Orissa (Rs. 1 million). It is anticipated that between Rs. 92-123 million will be needed for share capital requirements by the seventh year of the project.

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The requirement for the last four years may be less than what has been budgeted because the development of the project in Karnataka and Andhra Pradesh has been delayed.

The state federations have not been completely successful in selling their shares and collecting the commensurate cash. In Madhya Pradesh, for example, the two districts visited collected only 70% of the capital generated through the sale of federation shares. The remainder was to be paid on an installment plan. In addition, one society had not increased its membership in two years although such an increase had been planned. These situations are probably not unique to the Madhya Pradesh Federation and must be taken into account when projecting the share capital generated through individual and society membership. These factors, naturally, will affect the amount of capital generated and available to a federation.

There is one major financial management issue which needs to be addressed related to the share capital provided by NDDB/OVOW. The issue is the lack of any budgetary or accounting controls. This should not imply that the expenditure of funds cannot be accounted for. This is not the case. The problem is that there is no separate accounting performed for either share capital or other types of grants. They should be controlled separately with individual ledgers. There is apparently no rule, regulation or requirement from OVOW about the accounting of the funds. The state

federation are not required to set up an itemised budget about the intended uses of the funds nor are they obligated to keep a strict accounting for the expenditure of the monies.

The OVOW should issue a policy mandating that an itemised budget be prepared, submitted to and approved by OVOW before the share capital can be spent. This may seem an unnecessary control but since one objective of the share capital concept is to ensure "State Federation Discipline", this is the one mechanism to accomplish that end. If OVOW does not exercise its fiscal responsibilities, it will not be able to control and manage the project effectively. Furthermore, OVOW should mandate that share capital monies be deposited into an auditable, segregated account so expenditures can be monitored against the budget. These funds must not be commingled with other monies.

To take this one step further, it may be that OVOW should define explicity how share capital funds maybe used. For example, maybe the monies should only be used for procurement of raw materials. Since procurement will become a major capital investment each succeeding year, as much money as possible should be planned to be available. Gujarat had a cash flow problem with procurement during 1982-83 even though they had Rs. 2.3 crores of share capital available. Their problem was they committed the Rs. 2.3 crores before planning for their procurement requirement. This could have been avoided with better fiscal planning.

Madhya Pradesh has external factors affecting its share capital total. It has funds from the State of Madhya Pradesh and monies from the National Cooperative Development Corporation (NCDC). It would be advisable to have these monies budgeted and accounted for the same way the NDDB/OVOW funds are.

The NDDB/OVOW should issue a policy mandating that any investment by state federations of share capital, procurement and other NDDB grants must be approved by the Board of Directors of the Federation. The Managing Director should not be able to invest large sums of money (currently upto 10 lakhs) without prior approval of the Board of Directors. Any funds invested by the federation should be secured and guaranteed against losses. The investment guarantee should be in writing to minimise the federation's liability. If all the Board members are not available to render a decision than a quorum will be sufficient. The Board of Directors is the governing body of the federation and, therefore, should approve all financial investments.

I. Procurement Operations and Finance

Procurement Operations

Procurement operations provide the link between the project's production enhancement and processing activities. Procurement conducted under the project is intended to provide an assured, remunerative, and convenient market for farmers to support production enhancement efforts, and to provide adequate supplies of raw materials for the efficient operation of processing facilities. Levels of procurement which are consistent with efficient and profit maximising processing and marketing operations are critical to the success of the project. It has been assumed that profits earned in processing and marketing operations will eventually be sufficient to finance other project components, including production enhancement and research.

Several of the project's underlying assumptions have helped determine the nature of procurement policies and strategies:

1) It is assumed that the existing market structure is inconvenient to the producer by reason of market distance and that it fails to offer the producer fair prices because of subjective grading and collusion by traders which unfairly depresses producer prices.

2) It is assumed that oilseed production and productivity are responsive to price, that producer prices offered in the market are unremunerative, and that payment of higher prices will call forth additional production.

3) It is assumed that prevailing marketing margins for oilseeds and products are larger than they need be, and that cooperatives formed under the project can afford to pay higher producer prices and still compete effectively and earn profits in product markets.

The project's procurement strategy is designed to make sales to its cooperatives more fair and remunerative for producers than existing markets. Procurement is conducted at the village level using objective grading criteria. Pricing policies have varied by State Federation. The Gujarat Federation sets a minimum procurement price at the beginning of the marketing season and then procures at that price or the prevailing daily market price, whichever is higher. The minimum price established has been increased substantially each year and, at least in one year (1981-82), the minimum price was above prevailing market prices. The other federations have tended to buy at, or slightly above, prevailing local market prices without establishing a floor price. In all cases, prices are adjusted for quality factors including refractions and shelling percentage. The Gujarat Federation also grades for moisture and oil content based on tests conducted on samples sent to its processing facilities. Grading and local handling costs are paid by former farmer in the form of a commission to the local cooperative society and

transportation costs are paid by the Federation. Generally the prices received by farmer members appear to be higher than market prices, particularly when transport cost savings are considered, but the exact amount is uncertain because of differences in grading. While the policies of some Federations call for payment at or near market prices, these cannot be true market prices because the produce never figures in the bidding in the open market.

Payment to farmers can be made by any one of three methods, at the farmer's option. The direct purchase option provides the farmer with complete payment for his goods based on the price at the day of delivery. The 'Jhangad' method provides an initial payment at 80% of the market price at time of delivery and then allows the farmer to wait and pick any day up to the end of the marketing year on which to base the actual pricing and final payment. The 'pooling' method provides an initial 70% payment, with the final payment based on profits earned from the sale of oil and other by-products derived from his and other pooled produce. Storage and handling charges are deducted from farmer payments under the Jhangad and pooling methods. Currently, only the Gujarat Federation offers the latter two options to its members because it has its own storage and processing facilities.

As an additional inducement to sell to the federations, the intent is to make all payments to farmers promptly, by check, within 1-3 days of the transaction. Shortages of funds and, in the case of the Gujarat Federation, problems in conducting moisture and oil content tests rapidly have led to delayed payments and farmer complaints. In addition to payments for produce delivered, members are also entitled to receive an end-of year 'price differential', or bonus, based on a share of the operating profits, if any, of the Federation.

All procurement under the project has been conducted either at the village level through its cooperative societies or from other, non-project, cooperatives. No purchases have been made, or are planned, in the open market if necessary to supplement village level procurement and boost processing capacity utilisation. None of the Federations are conducting year-round procurement operations. Procurement is limited to peak marketing seasons due to a lack of procurement funds and limited storage facilities. In some cases, delays in arranging procurement financing have led to delays in beginning procurement operations until well into the marketing season.

Targets and Accomplishments: Project targets and achievements relating to procurement are shown in Table 1 (Appendix III I (1)). Procurement operations have been conducted only in Gujarat, Madhya Pradesh, and Tamil Nadu. Total procurement under the project has fallen well short of both original and revised targets. Procurement during 1982/83 may have reached the low revised target level if

poor weather had not reduced groundnut production, and if the Gujarat Federation had been able to arrange more procurement financing.

Failure to reach original procurement targets stems primarily from slower than expected organisation of States, villages, and farmers because of delays in project implementation, as well as lower than expected levels of procurement per farmer and per hectare. Average farm size has been smaller than projected and it is likely that yields per hectare have also been lower than was projected. Failure to meet even the low revised target levels, which appear to have been adjusted for the smaller farm sizes and yields actually experienced, is due to continued lags in cooperative organisation and the poor production year in 1982/83.

Procurement levels have been closer to target in the more heavily organized States of Gujarat and Madhya Pradesh. Procurement levels have been curbed somewhat in Madhya Pradesh and Tamil Nadu because of the unavailability of storage and processing facilities. In those two states procurement has apparently been limited to quantities that can be custom-processed in other cooperative (non-project) facilities and/or profitably stored and resold in the open market.

Lessons, Problems and Implications:

1) Per ton procurement costs have been substantially higher than originally planned (Table 2 Appendix III II (2)). The original assumption was that raw material prices would remain constant

(in 1978/79 prices) during the life of the project. The price assumed for 1978/79 was Rs.2000/ton while the price paid for groundnuts by the Gujarat Federation rose to Rs.4550/ton by 1982/83, implying an annual growth rate of about 19 percent in nominal terms and about 8 percent in real terms. Procurement costs, however, have tended to be lower for other states and other oilseeds. Total per ton procurement costs for the project have increased about 15 percent in nominal terms and 4 percent in real terms from the Rs.2000/- ton price assumed in 1978/79. The original assumption of constant real raw material prices appears to have been inconsistent with project objectives which called for provision of higher, more remunerative prices to farmers, and with Federation pricing policies which have generally called for above market prices. A continuation of early project price trends will require more procurement financing than originally planned, if targeted levels of procurement are met.

2) Procurement so far has been insufficient to run existing processing facilities in Gujarat at capacity, and is well below the levels required to run planned facilties in Madhya Pradesh and Tamil Nadu at capacity. Slower than expected cooperative organisation of villages and farmers, shortages of procurement funds, and some apparently deliberate curbing of procurement in Madhya Pradesh and Tamil Nadu explain much of the shortfall in procurement. However, the slower than expected rate of growth

in procurement, lower than expected levels of procurement per farmer and per hectare and, apparently, production per hectare may call for modification of goals regarding processing plant acquisition.

3) While procurement levels should rise steadily in early stages of the project as new societies are formed and more area is brought under the project, procurement will remain susceptible to variations because of the variability of rainfed production. Organization of cooperatives in primarily irrigated areas would stablise procurement but leave the problem of enhancing production on rainfed land unaddressed. The likelihood of variability in procurement has implications for procurement policies and processing capacity. Regarding procurement policy, it will be necessary to have more flexible access to financial resources for procurement. It may also be advisable to adopt a policy of procuring in the open market when procurement from cooperatives is insufficient for efficient operation of processing facilities and/or selling surplus procurement in the open market when procurement exceeds processing capacity. Regarding processing facilities, it may be advisable to reassess planned plant sizes and total processing capacity considering levels of procurement likely to be available in most years rather than during peak production years. Excess procurement in unusually high procurement years could be resold in the market. However, because of time constraints it was not

possible for the team to conduct all the analysis needed to support a change in processing capacity strategy. These issues require careful and ongoing operations research by the project.

4) Oilseed production and prices are volatile and largely unpredictable at present. Also, there is no firm evidence yet on the actual size of existing processing and trading margins. Therefore, the 'bold' steps taken by the Gujarat Federation in boosting procurement prices, as well as the more conservative steps taken by the other Federations in paying somewhat higher than market prices, may be unnecessarily risky and ill-advised. The Gujarat Federation was unable to compete effectively in product markets and incurred heavy losses in 1981-82. While 1981-82 was probably a difficult year for many processors because of the unexpectedly large jump in production, the Gujarat Federation's aggressive pricing polices and high raw material costs may have contributed to its losses. It had been assumed that production was substantially lower than it actually was, and that product prices would rise substantially more than they actually did. The experience to date suggests that a more cautious pricing policy is called for, and that it should not be assumed that prevailing private trading margins are large enough to permit payment of higher raw material prices by the cooperatives.

5) While there is little project history to draw from at this point, there does not appear to be any solid evidence that higher prices offered by the Federations have led to increased oilseed productivity except, perhaps, by bringing more irrigated area into oilseed cultivation. Research on the response of oilseed yields to prices in India has, generally, been inconclusive largely because of the overriding influence of weather. Higher prices may boost production by leading to shifts in area, particularly irrigated area, but yields on rainfed land will probably be more responsive to improvements in technology and inputs, particularly water and water management, than to price. The implication is that more emphasis on technology development and extension and improved input supplies, and less reliance on higher prices, may be a more efficient means of boosting production.

6) High prices for oilseeds in India relative to world markets also argue for a rethinking of project pricing policies. High domestic oil seed and oil prices are a function of national supply and demand conditions and not project pricing policies, but it may be inefficient and ineffective to attempt to boost prices further. Vegetable oil can be imported at well below Indian domestic prices and following a policy of promoting higher cost domestic production raises questions concerning

efficiency and consumer welfare. Costs of production for oilcakes which are uncompetitive in world markets, and too high to be absorbed by the domestic market, may also emerge as a problem.

Current oilseed prices appear to be substantially above average costs of production (certainly if GOI estimates are considered), while improved productivity should lower per unit costs of production. For irrigated production, where yields are much higher and per unit costs lower, current prices probably represent high profitability. Assuring higher prices may lead to area shifts and also provide a risk payment to rainfed producers subject to variable income, but will not necessarily result in investments and technology adoption which boost productivity if such technology is not available. Development and introduction of technologies which boost per hectare yields (and reduce per unit cost), particularly under rainfed conditions, would be a more efficient strategy. This strategy would appear to have more likelihood of achieving the project's objective of enhancing both producer and consumer welfare.

7) Farmer members appear to be reacting favourably to the project's procurement operations. Village level procurement is found to be convenient, the objective grading procedures used are appreciated, and farmers feel they are getting better

prices than they would in the market for quality produce. However, farmers seemed to think that they get better prices in the market for lower quality material. There was some discontent with delayed payments in some cases, and lack of year around procurement. Attention to these issues may boost procurement.

8) In some cases, it appeared that farmer indebtedness to private traders, and dependence on private traders for production and consumption credit, was limiting farmer sales to the cooperatives. The extent of this problem is not known, but effective provision of inputs and arrangements for production credits may be particularly effective in boosting procurement in some areas. Another possibility would be to give farmers the option to convert part of their procurement payments into interest bearing savings accounts which could be drawn on as needed. End of year price differential payments to members, which may tend to be larger per unit following poor production years when they are most needed to finance production inputs, may also address this problem.

9) The Jangadh and pooling methods of procurement appeared to be attractive to farmers in Gujarat where these options are offered. More widespread implementation of these methods would

assist in reducing procurement capital requirements. The pooling option would appear to be particularly attractive to both the farmers and the federations because it permits avoidance of the 4 percent groundnut purchase tax.

Planning and Management Issues:

1) At least some of the difficulties experienced by the State Federations in arranging procurement capital and setting it in place for timely procurement appear to stem from planning and management problems. Procurement funds are currently released to the Federations as loans from NDDB/OVOW. While unit procurement costs are higher than originally expected, levels of procurement are substantially lower, and it does not appear that shortages of funds with NDDB/OVOW are a problem at present. In 1982/83, the Gujarat Federation did not receive its procurement funds from NDDB/OVOW in time because NDDB/OVOW felt that the Federation had to force a resolution of several issues with the State Government which threatened the Federation's financial viability. These issues included State Government movement restrictions on the Federation's oil and mandatory sales at below cost of production for public distribution. It does not appear that NDDB/OVOW's policies on release of procurement funds were clear enough to permit effective planning on the part of the federation.

2) There does not appear to be a consistent viewpoint on what procurement pricing policy should be within NDDB/OVOW or the state federations. Pricing decisions are made by the Boards of the individual federations, based upon recommendations of their staffs. The Gujarat Federation sets a procurement price at the beginning of the marketing season based on what market prices are expected to be, while the other federations procure at, or slightly above, market prices prevailing during the season. In general, there does not appear to be any point in setting a procurement price based on what market prices are expected to be. If the established price ends up being below the market then the federation must procure at actual market prices anyway. If the established price is higher than the market, it Oill probably mean that the federation's products will be uncompetitive because of higher costs of production. To the extent that federation pricing policies influence market prices, the establishment of a minimum price based on forecast market conditions could lead to highly undesirable distortions of the market and the price signals it sends to producers. In any case, the benefit to farmer members is somewhat neutral because they are eligible for price differential payments at the end of the year based on federation profits.

It may be that in the early years of cooperative development that pricing policies have primarily been designed to attract

members. However, if it is decided that a more cautious pricing policy is called for in order to achieve financial viability and project objectives, considerable discontent on the part of members may accompany implementation of that policy.

Role of External Policy Factors: There are a number of state and national Government policies which influence oilseed and oilseed product prices and, hence, have a bearing on federation procurement and marketing operations. All imports of edible oil by India are canalised through the State Trading Corporation (STC). The level of imports, and their distribution and pricing, are regulated by the GOI. Imported oils are distributed at below market prices to vanaspati producers and fair price shops. The Government of Gujarat, and other state Governments, have the right to restrict movements of edible oils out of the State during periods of apparent shortage in order to stablise prices in the State. In addition, the states can require sales to the state at below market prices for public distribution purposes.

The effect of these policies on the project is to add uncertainity to federation pricing, procurement and marketing operations. STC policies regarding the distribution and pricing of imported oils have probably not been as detrimental to the interests of the project by depressing domestic prices and production as some people think. Imports of edible oils in recent years have generally been at levels which have still allowed real increases in oilseed and oil

prices. State Government policies on movement and sales of oils are much more unpredictable and more clearly a threat to the financial viability of the federations. Moreover, movement restrictions imposed at the state level are not in the national interest because they prevent producer prices within the state from reflecting national supply and demand conditions. However, the needs of both national and state Governments to adopt policies which balance producer and consumer interests will probably mean that the project will have to live with these policies and the uncertainities they create.

Procurement Finance

The procurement financing action item, budgeted within the major purpose capital, provides the funding necessary to purchase oilseeds from farmer members. Project funds for procurement were not included in the original budget because it was assumed that procurement could be conducted with commercially borrowed funds. However, the high cost of commercial borrowings was determined to be too much of a burden on the federations during the start up of their operations. Also, it was quickly determined that original projections of per unit procurement costs were too low (although the amount by which procurement costs were under estimated is reduced substantially when the data are adjusted for inflation). Consequently, a portion of the excess receipts from the sale of donated soybean oil at above the landed cost were allocated to a new action item for procurement

finance. Conceptually, it can be argued that a larger portion of the excess funds could have been appropriately budgeted for procurement finance. Sales of soybean oil at higher that expected prices also meant that prices for domestic oilseeds and oil and, hence, project operating capital requirements, were going to be higher than expected.

Strategy and Accomplishments: Table-1 shows that the actual levels of procurement in quantity and value terms achieved by the project against the original and revised targets. Despite high unit costs, total procurement in both quantity and value terms has been below target. Procurement operations have only been conducted in Gujarat, Madhya Pradesh and Tamil Nadu. If Andhra Pradesh and Karnataka had begun procurement as originally scheduled, and quantities procured were closer to target, total procurement costs would have been well above planned levels.

The procurement fund, as operated by NDDB/OVOW, is a revolving fund loan account. OVOW loans monies to a federation at an 8.5% interest rate with complete repayment due within ten months from the date of the loan. OVOW requires each Federation procurement loan application to have a detailed monthly cash flow of raw material acquisition. To date, OVOW has had no loan default problems with the state Federations although the Gujarat Federation is now in penalty for late payment.

Table 1 Actual and Targeted Project Procurement, Quantity and Value

	1979-80	80-81	81-82	82-83	83-84	84-85	85-86
Original Target:							
MT (000's)	14	73	216	436	730	1098	1546
1978/79 Rs.(million)	28	146	432	872	1460	2196	3092
1978/79 Rs./ton	2000	2000	2000	2000	2000	2000	2000
Revised Target (High):							
MT (000's)				225	440	1012	1395
Revised Target (Low):							
MT (000's)				115	270	506	698
Actual							
MT (000's)	3.9	24.8	93.1	49.9			
Current Rs.(million)	12.5	99.6	381.2	191.3			
Current Rs./ton	3200	4017	4094	3833			
1978/79 Rs. (million)	11.2	74.3	253.6	124.1			
1978/79 Rs./ton	2867	2996	2724	2487			

The projected annual procurement finances required by the last year of the project are now projected at from Rs.6 billion to Rs.10 billion. This assumes that all five state federations are acquiring raw materials for either their own processing plants or for custom processing. In addition, it assumes that the basic raw material will be in sufficient quantity to procure. If either of these assumptions change, the funds required change. While this issue must be studied more carefully, it now appears that, despite higher unit costs, quantities procured and total procurement costs may be below targeted levels.

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Lessons Learned: There have been a number of lessons learned regarding procurement. The Gujarat Federation learned that aggressive procurement pricing policies may have helped the producers, but hindered the ability of the Federation to generate capital for future needs. Consequently, 1982/83 witnessed an inability on the part of the Federation to procure at the preceding year's level. This unexpected result more than likely had a detrimental impact upon membership because they were unable to sell their produce to the Federation. In addition, the large procurement costs of the Gujarat Federation in 1981/82 were a major factor in its operating deficit of Rs.30 million. A fledging business cannot sustain such large losses very long and remain financially viable.

Another difficult lesson learned in 1982/83 was that raw materials are necessary to keep the processing plants operating at optimal capacity and, therefore, economically viable. Several of the Gujarat Federation's processing plants have had to close down for four to five months because of oilseed shortages. As a result, nearly all the processing plants will operate at a loss for the fiscal year ending June 30, 1983.

Problems and Alternatives: There are three problems related to procurement financing:

1) There is a cash flow problem because procurement takes place in a two to four month period after harvest while the processed oilseeds begin to enter the market place several months later. Very heavy borrowing is necessary with repayment dependent upon processing efficiency and product prices.
2) The Reserve Bank restrictions on borrowings for procurement are severe, requiring substantial margin money from the borrower. The interest rates from commercial banks are very high at 18% to 19.5%.
3) Recently formed state federations do not have the credit histories necessary for extensive borrowing of the funds needed for margin money.

There are, however, a number of approaches available to fund procurement activities. The compensating balance would require fixed term deposits as a percentage of the total financing required. This approach generates interest which could partially offset any interest charges on the funds borrowed. The Jhangad and pooling approaches pay a farmer a percentage of the full procurement price at the time of purchase, with the balance being paid at a later date. A possible problem with these approaches is if a federation must sell its finished product at a price which is less than the cost of production. In this instance the farmer not only is deprived of a bonus but he may lose the remaining percentage on his procurement price. Margin money enables a federation to borrow money

from a bank by contributing 40% for a 100% loan or 25% for a 80% loan. In addition, federations are permitted to borrow within the cooperative banking system at a rate of 12:1 against the share capital. Another approach could be to reassess the need for operational loss and capital construction monies. There is presently Rs.1.3 billion budgeted for these two items. Depending upon the rate of development of the project in the five participating states, it may not be necessary to spend the funds as originally budgeted. The monies could be used instead as margin money. Furthermore, the feasibility should be reviewed of permitting those states which export deoiled cake to use their Export Packing Credit Limit as a pledge for margin money. The NDDB/OVOW does not allow this practice presently.

It should be remembered that procurement capital operates through a revolving fund so that all monies loaned are returned within a specific period of time. As mentioned earlier, NDDB/OVOW has had no defaults on any of these loans to date. If the federations continue to repay their loans on time, the various fund procurement techniques are followed, and NDDB/OVOW is given more flexibility in shifting funds within the capital major purpose (see section IV D) there is every reason to believe that sufficient capital procurement monies will be available for the duration of the project. However, there is no way the currently budgeted Rs. 425 million will be sufficient for procurement financing and it is vital that NDDB/OVOW be given the flexibility to shift funds within the capital major purpose.

The one problem which must be avoided by a federation is the commitment of its resources too early in the fiscal year, thereby, limiting its flexibility. The Gujarat Federation had procurement problems in 1982-83 because it anticipated receiving monies from one source, which subsequently did not materialise, and had no recourse because it had committed its Rs.2.3 crores in share capital for other purposes.

Recommendations:

1) Reassessment of Procurement and Processing Capacity Targets

The project may benefit from a careful reassessment of both procurement and processing capacity targets in each state. It is recommended that this be the topic of a major Operations Research Study. The following factors lead to this conclusion:

(a) Achieved levels of procurement to date have been below target. Levels of procurement will be very difficult to predict with certainty. In the early stages of the

project, procurement levels in each state will be heavily dependent on the rate at which more area is organized under the project, as well as levels of production. Other factors will be achievements in terms of oilseed area and yield per member and procurement per member - all of which appear to have fallen below projected levels to date. As state federations become more completely organized, procurement will depend primarily on production gains achieved by their members, something which will be uncertain and difficult to predict. Procurement levels and utilization of planned processing capacity appear particularly vulnerable in Madhya Pradesh because there is considerable uncertainty about the achievement of targeted levels of soybean production.

(b) Oilseed production and procurement is likely to remain subject to variability. More production under irrigated conditions will reduce variability but a major portion of the area under the project will be rainfed.

These factors have implications for levels of planned processing capacity as well as the size of individual plants. Larger plants may be appropriate in irrigated areas where production, procurement and optimal capacity utilization are more certain. Smaller plants may have a better chance of running at optimal capacity in rainfed areas where production is unstable.

While it would appear much less risky to the project to err on the side of underinvesting in processing capacity, this is an issue that requires much more analysis than has been possible during this evaluation.

2) Reassessment of Procurement Pricing Policy

The project would benefit from the development of a clear and appropriate procurement pricing policy which would, preferably, be adopted by all state federations. The suggested elements of that pricing policy are as follows:

(a) The establishment of a minimum support price based on estimated average costs of production which would be announced before each crop year. Cost of production surveys would have to be conducted for this purpose. Ideally, the same price based on national average costs and yields would apply to all States. However, if it is determined that distortions in factor or product markets lead to significantly different production costs in some areas, then different support prices might be used in different areas. The support price should be based on estimates of the cost of the average level (not the recommended level) of variable inputs used during the crop year and average yields. It is not recommended that a risk factor be added to estimated costs because it

would be a bonus to irrigated producers and may serve to replace efficient risk and drought management on the part of rainfed farmers. The purpose of the support price would be to establish for producers a price below which the federations will not allow prices to fall during the marketing season.

(b) Procurement should be conducted strictly at market prices based on daily prices in a central market in each State. Federation levels of procurement and prices paid should be made available in markets as quickly as possible so that actual market prices can reflect these transactions. Farmer members should be provided with local market prices daily so that they have the necessary information on which to base their marketing decisions. Consideration should also be given to having the farmer pay a share of the federation's transportation and local handling costs. There does not appear to be a good reason why the federations should be subsidizing these costs to the farmer and effectively boosting prices received by farmers above the market. The real inducements for selling to the federation should be objective grading, convenience, the possible end of year bonus, and access to inputs and extension services.

(c) Procurement should be conducted year around.

It is felt that these policies will provide adequate incentives to producers and be more efficient than existing policies. Market pricing coupled with increased attention to raising productivity will be more consistent with national policy objectives and with achieving both the producer and consumer oriented goals of the project.

3) <u>More Budgetary Flexibility for Procurement Financing</u>

It is recommended that NDDB/OVOW be given more flexibility to shift funds within the capital major purpose to support procurement financing. The fact that per unit procurement costs have been higher than expected, that procurement and procurement prices are likely to be variable, and that the currently budgeted Rs. 425 million will be insufficient to support project procurement operations suggest that this flexibility is necessary. It can be argued that more of the funds generated from the sale of donated soybean oil should be made available for procurement because the sale of the donated soybean oil at higher than expected prices also meant that project operating capital requirements for processing domestic oilseeds were also going to be larger than expected.

4) <u>Development of a Clear NDDB/OVOW Policy on the Conditions for Release of Procurement Funding to the Federations</u>

NDDB/OVOW is essentially in the position of banker in lending funds to federations for procurement. Appropriately, NDDB/OVOW must be assured that federation management and policy decisions are sound and contribute to financial viability. Successful procurement will depend on timely transfers of procurement funds, and NDDB/OVOW policies which are clear enough to permit effective planning by the federations.

It is recommended that NDDB/OVOW request a detailed proposal for the expenditure of all funds related to the capital major purpose which includes share capital, procurement funds, capital construction and operational losses. The disbursement, budget and accounting of these monies should be carefully controlled and monitored. They should each be segregated into separate accounts at the federation level for auditing purposes. Through strict monitoring the NDDB/OVOW will be better able to assess its procurement requirements each year and plan to interchange monies, if necessary, to procurement from the other action items within the capital major purpose.

5) Gradual Reduction of NDDB/OVOW Procurement Support to Federations

It is important that the state federations begin utilizing, to the extent possible, the commercial vehicles for procurement. This need not occur at once, but NDDB/OVOW should schedule a phased-in approach, whereby, they would provide only a certain percentage of a federation's requirement which would be directly related to the length of time a federation has been in operation. Therefore, a federation in existence for four years would not be eligible for the same percentage of procurement assistance as a federation operating for one or two years. By the end of year seven no support would be available from NDDB/OVOW. The interest rate for the loan would escalate each year until year seven when it equalled commercial rates. If this scheme is determined to be desirable, it should be formulated as a policy and communicated to the federations so they have sufficient lead time to plan for it. If this is done, it will go a long way toward ending the misconception of several federations that NDDB/OVOW has an inexhaustible source of funds.

Table 2 PROCUREMENT ACHIEVEMENTS AND UNIT VALUES BY STATE

	1979/80	1980/81	1981/82	1982/83
Gujarat				
Groundnut				
MT	3888	19797	81650	29159
Rs/ton	3200	4350	4295	4550
Other*				
MT	-	-	29208	-
Rs/ton	-	-	2705	-
Madhya Pradesh				
Soybean				
MT	-	5015	10834	19874
Rs/ton	-	2700	2580	2769
Tamil Nadu				
Groundnut				
MT	-	-	621	894
Rs/ton	-	-	3974	4100
Total				
Groundnut				
MT	3888	19797	82271	30053
Rs/ton	3200	4350	4293	4537
Soybean				
MT	-	5015	10834	19874
Rs/ton	-	2700	2580	2769
Total				
MT	3888	24812	93105	49927
Rs/ton	3200	4017	4094	3833

*Includes cottonseed, soybean, mustard seed and sesamun. Quantities of other oilseeds not included in Table 1 (Appendix III I(1))because they were not procured from farmer members.

Appendix III I (2)

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J. Operational Losses

The objective of this action item is to provide NDDB/OVOW the ability to finance losses incurred by the project authority in carrying out activities which are essential to project implementation, but which carry too great a risk of loss for newly established state federations to finance from their own resources. It was originally thought that the processing facilities and procurement action items would benefit most from these funds.

It was assumed that the processing facilities would operate at a loss for two or three years before stabilizing. Therefore it was necessary to have an alternate source of funding available to ensure the solvency of the plants. The second use of the funds was to finance losses undertaken to assure that grower members received a fair price for their oilseeds in years when market prices and yields did not produce income equal to the costs of production.

To date no funds have been spent for operational losses. There is a budget of Rs. 20 million for this action item for three of the remaining four years of the project. The last year has no funds budgeted.

It has not been determined by NDDB/OVOW whether to treat these monies as a 70% loan - 30% grant or as a total grant. It is

recommended that when, and if, these funds are utilized it should be on a loan basis. If the purpose of the operational loss component is to minimize such losses through careful planning and effective management then a loan is the only mechanism that will act as a disincentive for failure. Otherwise, with a grant, there is no penalty imposed for poor management.

One lesson learned was that the concern for farmer losses related to market prices has not materialized. On the contrary, the prices have risen dramatically the past several years. In addition, it has been learned that the operating margins of the processing plants have narrowed. Moreover, the anticipated solvency problems with the processing facilities have not developed to date, although most of the Gujarat plants operated in a loss for 1982-83 because of a lack of raw materials to process. Another reason for the losses was the inequitable reimbursement procedure GROFED employs in paying its plants for crushing and solvent extraction services.

Careful consideration should be given before any implementation of plans for using operational loss funds for their second stated purpose -- the payment of unit prices higher than the support price established before planting, and above market harvest prices in very poor production years so that producers can recover their per hectare costs of production. Such a program has the potential for being both very inefficient and very costly. An upward adjustment

in the price payable to all farmers for this purpose may benefit producers affected by the crop failure, but would be a windfall to irrigated producers. Another option for dealing with crop failures would be the implementation of a crop insurance scheme for which interested producers should pay an insurance premimum. However, risk insurance schemes have proved very difficult to administer effectively and have not been particularly successful where they have been tried. Targeted programs, designed to provide needed farm inputs, and/or cooperative savings schemes, which would provide funds in poor years, may be more efficient ways of protecting producer welfare.

The operational loss action item, as conceived, is basically an insurance policy against unexpected calamaties. This responsibility more appropriately belongs within each state federation because that is where the authority lies to address such matters. There is no reason to have NDDB/OVOW viewed by the states as a "bailout" mechanism for problems they cannot resolve. It is, therefore, recommended that the operational loss action item be discontinued and the monies be reallocated to the development major purpose. Any risk, and therfore any substantive loss, by either NDDB/OVOW or the state federations will be with developmental activities, i.e., new products, creating a national oilseed and oil grid, etc.; so the monies should be located where they will have the most use.

X. Management Training

An important feature of the CGCP strategy is the employment of trained, competent and highly motivated personnel in management positions. NDDB's experience in application of the Anand Pattern in Operation Flood indicated the importance of such staffing and provided excellent experience for a number of NDDB staff members who have been absorbed by NDDB/OVOW and the federations for some of the key positions. However, recognising that there will be a rapidly growing need for personnel with good management skills and an orientation toward rural development, provision was made for incorporating a new component for management training to be funded from the second special fund.

The management training component provides for training project management personnel at the Institute of Rural Management, Anand (IRMA). IRMA was established with the main objective of training professional managers for work in rural producers' organisation. The two-year post-graduate course combines training in professional management with exercises designed to increase sensitivity to village conditions and problems. The programs include classroom studies of rural environments and farmer orgainsations, traditional management courses based on rural case studies and a fieldwork and management segment consisting of 10 weeks of field work in a rural environement and up to 32 weeks in management traineeship, where students are attached to rural organisations for practical training.

Ten studenets were sponsored by the project each year beginning in 1980-81 through 1982-83. Upon completion of the course each of these students is obliged to accept (if offered) employment with OGCP for upto three years.

The first batch of IRMA graduates was graduated in 1982. Ten of them have been assigned to various positions in OVOW and the federations. It is too early to make an objective evaluation of the impact of the program on the project but there is little doubt about the usefulness of such training in developing the kinds of managers the project needs. Following are year by year targets for management training at IRMA for employment with OGCP.

Table: Training of Managers for OGCP - Phase - II

	1982-83	1983-84		1984-85		1985-86	
		L	H	L	H	L	H
Students in training at IRMA for OGCP:							
Annual entrants	10	10	20	20	30	20	30
Cumulative	31	41	51	61	81	81	111
Students accepting OGCP assignments	10	10	20	20	30	20	30
IRMA graduates completing 3 years with OGCP		11		10		10	20

There should be no difficulty in achieving the "high" training targets for project years 4-7. The program attracts thousands of

applicants each year, permitting selection of highly qualified candidates for the 80 students admitted each year. The need for more well trained managers is certain to offer employment opportunities throughout OVOW and the federations for all who complete the program. It is recommended that the targets for phase two should be the high level.

L. Cooperative Development

The purpose of the cooperative development component is to explore the potential for adapting and applying the Anand cooperative pattern to other commodity sectors. NDDB has organised special study groups to investigate the opportunities for this approach in developing the jute, cotton, fishing and fruits and vegetable industries.

Initial studies to design and develop the oilseeds growers' cooperative project, as well as substantial pre-project expenditures for the project, were funded from resources generated by Operation Flood-I. When AID required that funds generated from the sale of the donated soybean oil in excess of landed value be placed in a second special account it was agreed that the cooperative development component would be added as one of the appropriate uses for that fund. Only Rs.69,000 had been used by the end of March 1983. An additional Rs.30,639 million rupees (low) to Rs.33,637 million (high) are budgeted for this item to the end of the project. This is a rather modest budget for the various studies and pilot operation planned but reflows can be allocated to this activity, beyond the amount budgeted, at the discretion of the NDDB Board of management. No change is recommended in plans for this activity.

IV. FINANCIAL EVALUATION

A. Budget Expenditure and Income Review of the Multi-Year Operational Plan

To properly analyze the budgets, expenditures and income levels of the multiyear operational plan, several caveats must be made. The first is that there is, and apparently always has been, some confusion about the official start date of the project. Is it when NDDB began actively supporting it (1977)? Was it when the first shipment of oil arrived from the USA (June 1979)? Or was it when the oil was sold and sufficient rupees generated to fund the project on a large scale (March 1980)? The date is important because the three year evaluation expects certain targets to be achieved on a project wide basis. However, the reality is that even in 1982-83, there were only three state federations effectively operating: GROFED, OILFED and TANCOF. The planned federations at Karnataka, Andhra Pradesh, Orissa and Maharashtra are still in an evolutionary stage. The consequence of this is that the actual expenditure level of the project through year three (1979-80 through 1981-82) is significantly below the planned budget: Rs. 94 million compared to Rs. 703 million respectively, or 13.4% (see Appendix IV A (2)).

A second issue requiring an explanation are the number of action items. The original project plans envisioned only seven action

items and a sinking fund. It was not until the revised Multiyear Operational Plan (MYOP) that the additional action items share capital, procurement support, cooperative development, operational losses (replacing the sinking fund) and management training were officially added. These new items were partially funded with the savings generated through the first three years of the project, and with the excess rupees obtained through the sale of the refined soybean oil above the original price of Rs. 6,000 (see Appendix IV A (4)).

The definition of the project budget is a third matter to review. The MYOP includes primarily three types of activities; capital, developmental, and operational. With each of these the NDDB/OVOW is attempting to create an infrastructure leading to the formation of a nationwide oil federation. The nucleus for that proposed federation would be the technical support personnel within OVOW. The funding for these activities is derived from the sale of the USA and Canadian donated refined oil. This budget and its income must be understood to be entirely different from the budget and income of a federation.

While a federation does receive funds (loan, grants, share capital, capital construction monies), and technical support assistance (manpower development, organized research and continuing information system support) from NDDB/OVOW it is not

a charge to their budget in the first instance. It only becomes a budgeted item during repayment. On the other hand, the daily operational expenses of a federation such as salaries and wages, telephone, telegraph, postage, electricity, travel, furniture, rent, etc. are not included in the MYOP budget. It is assumed that a federation will earn enough income from the sale of its deoiled cake, oils and other activities to support itself.

This leads to the fourth caveat which is that the project plan does not factor in an inflation rate for the budgets. If one assumes that the rupees are constant throughout the seven year period then the purchasing power by the last year would be significantly less than the first year. The inflation rate has been partially offset, to date, by the interest being earned on the unspent monies that have accumulated through year three, and the budget monies that are being held in fixed deposits to fund the project in subsequent years (see Table I). However, the omission of an inflation factor could result in some budget shortfalls in the future, i.e., capital construction costs escalate at a rate greater than the average inflation percentage.

The historical trend of underspending the planned budget will probably continue through 1982-83 (see Appendix IV A (3)). The budget was estimated to be Rs. 101 crores while the actual expenditures through March total nearly Rs. 56 crores. If this rate of expenditure continues through the end of June, it can be

projected that the total expenditures will be approximately Rs. 74 crores or 74% of the planned budget. This is related, of course, to the delayed progress with the Karnataka, Andhra Pradesh, Maharashtra and Orissa Federations. Consequently, the planned expenditure targets have fallen short for such project action items as organized research, production enhancement, share capital, product development and market research and testing. During the fiscal year the action items which had their expenditure totals most closely approach or exceed their budgeted amounts were procurement support at 91% and project management and implementation at 140%.

The largest planned expenditures during the last three years of the project (1983-84, 1984-85, 1985-86) involve the processing facilities, primarily capital construction at Rs. 656 million; oil seed production enhancement at Rs. 511 million; procurement support at Rs. 425 million and project management and implementation at Rs. 97 million (see Appendix IV A (4)). These budgeted levels assume that all the planned state federations will be in operation.

The total project budget necessary to fund all the action items, for each planned federation for a period of seven years whatever the actual start date, is Rs. 322 crores. This number includes an inflation factor of 9% (which was missing in the MYOP) for

each of the last three years of the original project plan. Against this budget requirement is an income projection of Rs. 261 crores through 1985-86 (see Table 1). This includes the planned sale of 42,000 MT of soybean oil at Rs. 10,900 PMT in 1983-84, 37,000 MT at Rs. 11,881 PMT in 1984-85 and 5,000 MT at Rs. 12, 950 PMT in 1985-86. The price increase of the soybean oil is estimated at the same rate of inflation (9%). The income level assumes the sale of the entire 160,000 MT of soybean oil originally scheduled. In addition, the Rs. 261 crores figure includes Rs. 85 crores of Canadian oil.

The OVOW will generate revenues through and beyond the 1985-86 year from the repayment of capital construction loans, interest earned on procurement monies and the interest earned on budgeted funds held in fixed time deposits. Between 1986-87 to 1989-90 this will amount to Rs. 13 crores. This amount, however, has not been added to the Rs. 261 total because it is earned after 1985-86. There is, therefore, a deficit of Rs. 61 crores between the budget requirement for the project and the estimated income. If certain federations are further delayed in getting established, the unspent funds can probably remain in fixed time deposits and earn interest rates that will be comparable to the rate of inflation. In addition, the delay will inadvertently help reduce the deficit by making available those funds generated from the scheduled repayment of loans, principal and interest.

The only way to guarantee that each federation has an equal opportunity to get established and receive the developmental, capital and operational infrastructure intended by the project, is to ensure that sufficient monies are available for at least a seven year period. It is therefore recommended that an additional 37,000 MT of soybean oil be provided above the original agreement for 160,000 MT. This would generate an income of approximately Rs. 48 crores (at Rs. 13,000 per MT) during 1985-86. The remaining Rs. 13 crores would become available between 1986-87 and 1989-90. Since Karnataka, Andhra Pradesh, Maharashtra and Orissa are just beginning to organize themselves, their seven year period would extend into 1989-90; so the Rs. 61 crores deficit would be eliminated and the project plan in balance.

Table 1 INCOME PROJECTION FOR THE MULTIYEAR OPERATION PLAN

Year	Sale of Soybean Oil		Interest savings Year 1-3	Interest savings Year 4-7	Interest earned on repayment (capital. procurement)	Total
	Qty. in MT	(Rs. Lakhs)	(Rs. Lakhs)	(Rs. Lakhs)	(Rs. Lakhs)	(Rs. Lakhs)
1979-80	18,702	1,606.18	-	-	-	1,606.18
1980-81	34,317	2,930.87	12,15.00	-	-	2,943.02
1981-82	9,959	925.41	63.38	-	69.45	1,058.24
1982-83	13,022	1,316.34	1.98	-	267.09	1,585.41
1983-84	42,000	4,580.00	-	15.00	225.00	4,820.00
1984-85	37,000	4,396.00	-	40.00	238.00	4,674.00
1985-86	5,000	648.00	-	60.00	240.00	948.00
1986-87	-	-	-	5.00	300.00	305.00
1987-88	-	-	-	20.00	320.00	340.00
1988-89	-	-	-	30.00	300.00	330.00
1989-90	-	-	-	60.00	280.00	340.00
Total	160,000	16,402.8	77.51	230.00	2,239.54	18,949.85

BUDGET COMPARISON : ORIGINAL NDDB DOCUMENT VERSUS REVISED MYOP
(Rs. Million)

Items	Original NDDB Document	Revised MYOP (PY4-PY7) LOW	HIGH	AVE. (X)	Actual Disbursement upto June 82) (Y)	Total (X+Y)
1. Processing	596.75	762	881.5	821.75	55.941	877.691
2. OR & MIS Studies	18.50	16.77	21.5	19.135	0.516	19.651
3. Mkt. Res.,Testing	22.95	23.1	27.72	25.41	0.733	26.143
4. Oilseed Prodn.Eng.	439.74	484.618	590.852	537.735	18.658	556.393
5. Product & Process	11.70	20	20	20	0.019	20.019
6. Manpower Devpt.	30.00	48	59.57	53.785	6.198	59.983
7. Proj. Mgt. & Imp.	102.87	112.94	152.105	132.522	24.905	157.427
8. Fedn. Sh. Capital		222	289	255.5	21.00	276.50
9. PCMT Support		425	425	425	372.887	425.00
10. Operational Losses	277.49	50	80	65		65
11. Management Training		2.854	3.44	3.147		3.147
12. Coop. Devpt.		30.637	35.563	33.1	0.009	33.109
Sinking Fund	277.49	730.491	831.003	780.747	393.895	802.756
Total	1,500.00	2,197.919	2,586.257	2,391.084	500.953	2,520.063

*Revolving Fund

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BUDGETS AND ACTUAL DISBURSEMENTS
1979-80 TO 1981-82
(Rs. Million)

Items	Upto March 1980		1980-81		1981-82		Cumulative		
	B	E	B	E	B	E	B	E	
1. Processing Facilities	155.50	2.807	80.00	28.998	62.90	14.128	298.4	45.935	Source
2. OR CIS Stud.	6.00	0.364	2.50	-	2.50	0.051	11.00	0.415	Budget Figs.
									NDDB Origin
3. Market Rs. Testg.	11.45	0.465	3.10	0.189	2.10	0.079	16.65	0.733	Proj. Doc.
4. Oilseeds Prodn. Enhan. Program	177.61	0.747	59.98	2.682	54.83	15.192	292.42	18.621	
5. Product & Process Develpt.	4.70	-	1.30	0.002	1.30	0.017	7.30	0.019	
6. Manpower Dev.	9.70	0.002	3.20	0.916	3.40	5.134	16.30	6.052	
7. Project Mangmt. & Imp.	32.87	6.825	14.00	8.126	14.00	6.743	60.87	21.694	
Sinking Fund	277.49	228.16	277.49	185.816	277.49	199.744	277.49		
Total	675.32	239.37	441.57	226.729	418.52	241.088	980.43	94.067	

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BUDGET AND ACTUAL DISBURSEMENT FOR 1982-83 (Rs. Million)

Items	BUDGET Low	BUDGET High	BUDGET Ave.	Disbursement upto June, 1982	Disbursement upto March, 1983
1. Processing Facility	242.05	365.55	303.80	55.941	124.382
2. OR & CIS Studies	4.67	6.25	5.46	0.516	0.838
3. Mkt. Res. & Testing	4.20	5.04	4.62	0.733	0.734
4. Prodn. Enh. Pgm.	103.38	140.0	121.69	18.658	20.434
5. Product & Pro. Devpt.	4.6	4.6	4.6	0.019	0.079
6. Manpower Devpt.	8.92	11.09	10.005	6.198	6.792
7. Proj. Mgt. & Imp.	21.61	28.82	25.215	24.905	31.341
8. Fed. Sh. Cap.	51.00	102.00	76.5	21.00	32.00
9. Procur. Support	425.00	425.00	425.00	372.887	340.410
10. Operational Losses	20.00	30.00	25.0	-	-
11. Mgt. Trg.	0.31	0.31	0.31	-	-
12. Coop. Dev.	3.692	4.101	3.897	0.009	0.258
	889.432	1,122.761	1,006.097	500.953	557.268

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BUDGET REQUIREMENTS FOR 1982-83 TO 1985-86
(Rs. Millions)

Items	1982-83		1983-84		1984-85		1985-86		Total	
	L	H	L	H	L	H	L	H	L	H
1. Processing	242.05	365.55	275.15	296.15	175.9	142.4	68.9	77.4	762.0	881.5
2. OR & CIS STUD.	4.67	6.25	4.10	5.25	3.50	4.70	4.50	5.30	16.77	21.50
3. Market Res. Test.	4.20	5.04	5.30	6.36	6.50	7.80	7.10	8.52	23.10	27.72
4. Oilseeds Prod. En.	103.382	140.00	112.736	124.39	121.494	136.18	147.006	190.282	484.618	590.852
5. Product & Process	4.6		7.3		5.3		2.8		20.0	
6. Manpower development	8.92	11.09	10.25	12.73	13.35	16.56	15.48	19.19	48.00	59.57
7. Project management	21.61	28.82	24.02	34.905	25.925	37.55	37.385	60.83	112.94	152.105
8. Federation Share	51.0	102.0	29.0	41.0	21.0	25.0	121.0	121.0	222.0	289.0
9. Procurement support	425.0		425.00		425.00		425.00		425.00	
10. Operational Losses	20.00	30.00	20.00	30.00	10.00	20.0	-	-	50.0	80.0
11. Management Trg.	0.31	0.31	0.36	0.56	1.087	1.28	1.097	1.29	2.854	3.44
12. Coop. Devpt.	3.692	4.101	5.605	6.352	7.474	8.193	13.866	14.917	30.637	35.563
Total	464.434	697.761	493.821	564.997	395.53	404.963	419.134	491.529	2,197.919	2,586.257

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B. Processing Plants

The processing plants at Dhasa, Bhavnagar, Jamnagar, and Gondal were visited in Gujarat while the proposals for the Ujjain plant in Madhya Pradesh and the plants in Tamil Nadu were reviewed.

There are some basic observations common to all the processing plants which need to be reviewed. From a financial perspective, the planning for the plants is inadequate. There are no long range estimates, 5-10 years, of the projected operational costs or revenues. For example, the Ujjain plant in Madhya Pradesh is scheduled to open in 1984. It is being constructed at a capital cost of Rs. 13 crores. The Madhya Pradesh project document assumes that the plant will operate at optimal capacity its first year and generate a profit. There is absolutely no forecast of either costs or revenues into the future. Furthermore, there is nothing in their limited projection related to the repayment of the capital construction loan or its interest to NDDB/OVOW. This could amount to nearly Rs. 2 crores annually in the early years of repayment. This cost alone will probably ensure that the plant operates in a deficit for at least 5 years, assuming optimal utilization.

The Tiruvannamalai and Virudachalam plants in Tamil Nadu, being considered for acquisition by NDDB/OVOW, should be analyzed so that the problems which have inhibited the performance of these plants to

date, and resulted in utilization rates of less than 25%, do not continue under the tenure of TANCOF. The continuing problems experienced by TANFED have been the lack of raw oil storage; hexane; electrical power; raw materials to process; and coal.

The OVOW staff does not appear to be making a detail review of the financial assumptions being made by the various federations regarding processing facilities. For example, as mentioned above, the Ujjain plant assumes optimal utilization of the plant from the day it opens. This projection, based upon the actual experience of the plants in operation, is unduely optimistic. The average utilization of the plants in Gujarat for the past several years has ranged from 23% to 53%.

In addition to the lack of any long range planning and financial analyses, there is no financial planning performed before a fiscal year begins. The processing plants have not been required to prepare either a budget document, a monthly cash flow of the budget or a variance report indicating the differences between the cash flow and actual expenditures. These documents normally serve as planning tools and can be revised to account for unexpected, or expected, variables.

What has been provided as budget information has actually been year end expenditure data by unit cost.

Perhaps part of the problem is that the unit managers of the processing plants do not really control their environments. The determination of the amount of oilseeds to be crushed at a particular plant is determined at the federation headquarters not by the unit manager. If there is a shortage of raw material supplied by the federation, the unit managers (within GROFED) are not permitted to enter the regulated market to procure or perform custom processing. This leaves the plants with underutilized capacities.

The solution to this problem is to divide a state into geographical regions. The unit manager of a plant would be semiautonomous in his region and given the ability to acquire whatever amount of raw material was needed to maximize plant utilization. This would place more responsibility at the local level rather than centrally and provide the manager the means to be creative in maximizing his resources.

Until the processing plant managers have control over their oilseed procurement and the sale of the subsequent by-products (oil, deoiled cake, etc.), they will have no incentive in following a budget because it will be meaningless to them. In GROFED, for example, the processing plants are paid Rs. 100 PMT for crushing and Rs.200 PMT for solvent extraction. These are arbitrary amounts which do not

come close to covering actual crushing and solvent extraction costs. For example, the actual crushing cost per metric ton in Bhavnagar in 1982-83 was Rs. 185 projected to increase to Rs.325 in 1983-84. The real cost for solvent extraction per metric ton was Rs.199 planned to escalate to Rs.259 in 1983-84. These plants will never be in a position to earn a profit until the management of GROFED changes its policy and gives the unit managers the kind of independence discussed above.

One of the stated goals of the Multi-Year Operational Plan is to generate surplus revenues from processing plant activities to offset the costs of other services like production enhancement. In GROFED this is not possible because the processing plants, by design, cannot earn a profit. They are currently set up to absorb Federation losses.

These issues should be reviewed by NDDB/OVOW. There should be guidance and direction from Anand regarding the type of financial analyses needed to assess the viability of a new processing plant proposal. Minimum budgetary and accounting standards should be established for all processing plants. There should be an examination of the GROFED reimbursement policy to its processing plants because the existing method ensures operational deficits.

In reviewing the detail cost of operation at Bhavnagar plant it became apparent that a significant part of the total cost was related to packing. In 1982-83 the packing cost represented approximately 24% of the total operating cost while in 1983-84 it is projected to rise to 28%. The major cost is for tins which are used as containers. A review of industry-wide standards for packing costs should be done to determine if the GROFED costs are unusually high and, if so, the reasons for it.

The analyses of the different processing plants show that optimal plant utilization has a significant impact upon the processing cost per metric ton. A plant's fixed costs per metric ton is inversely related to its processing. For example, at Dhasa the fixed cost in 1981-82 per metric ton at 2,559 MT was Rs. 22 while the projected cost at capacity (15,000 MT) is Rs. 8 or a 64% reduction (see Appendix IV B (1)). At Jamnagar the 1981-82 actual fixed cost per metric ton for processing 13,077 MT was Rs. 387 while the same cost at full capacity (75,000 MT) would be Rs. 52 or a decrease of 87% (see Appendix IV B (2)). The estimated fixed costs per metric ton at the Ujjain plant will decline from Rs. 336 at 48,000 MT to Rs. 135 at 120,000 MT. As plant capacity increases the fixed costs of production per metric ton decreases dramatically.

A plant's ability, naturally, to reach full capacity is dependent upon the availability of the raw material, its price, stores, power,

etc. Since the oil processing business is volatile in nature and subject to these many variables, a computerized financial planning model needs to be developed that would enable someone at either the federation or processing plant location to input the different variables into hypothetical alternatives and produce proforma financial statements as an output. Such a forecasting tool should minimize the uncertainties which currently hinder planning.

The profitability of a processing plant is affected very much by the price paid for the raw material to be crushed and the selling price of the final product. The timing of the purchases and sales and the maintenance of a low fixed cost per metric ton are critical elements in maximizing profits.

The processing plants within GROFED, which are the only plants in operation, are viable if the processing reimbursement amounts per metric ton are increased to factor in a profit margin and the existing procurement practices discussed above are changed. In addition, it is important that the Federation, in the future, not set unrealistically high premium prices for procurement; otherwise, its processing plants operating margins will be effectively eliminated. To date, the processing plants show a profit, despite very high individual losses, because of the depreciation amount permitted by the Government of India. If this were not the case, the solvency of the plants would be in question.

APPENDIX IV B (1)
(Rs. In thousand)

GEORGE DHASA UNIT
ACTUAL AND PROJECTED COSTS FOR TOTAL OPERATIONS

	1981-82 (Actual)	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Raw Material (MT)	2,559.50	5,920	11,320	15,000	15,000	15,000	15,000	15,000	15,000
Variable Costs									
Power	64.75	149.78	266.40	379.50	379.50	379.50	379.50	379.50	379.50
Stores	37.64	87.02	166.40	220.50	220.50	220.50	220.50	220.50	220.50
Labor	34.51	75.60	152.59	202.20	202.20	202.20	202.20	202.20	202.20
Packing	14.51	32.73	62.60	82.95	82.95	82.95	82.95	82.95	82.95
Sub Total	151.41	345.13	667.99	885.15	885.15	885.15	885.15	885.15	885.15
Fixed Costs									
Admn OH	6.59	6.59	6.59	6.59	6.59	6.59	6.59	6.59	6.59
Salaries	37.66	37.66	37.66	37.66	37.66	37.66	37.66	37.66	37.66
Depreciation	85.97	85.97	85.97	85.97	85.97	85.97	85.97	85.97	85.97
Set up cost	13.41	-	-	-	-	-	-	-	-
	143.63	130.22	130.22	130.22	130.22	130.22	130.22	130.22	130.22
Capital payments									
Principal	-	-	-	65.22	70.89	77.04	83.73	90.98	98.88
Interest	-	-	-	59.08	53.11	47.26	40.57	33.32	25.42
Sub-Total	-	-	-	124.30	124.30	124.30	124.30	124.30	124.30
Total Cost	294.77	475.35	798.21	1,139.67	1,139.67	1,139.67	1,139.67	1,139.67	1,139.67
Cost/MT	115.27	80.29	70.51	75.98	75.98	75.98	75.98	75.98	75.98
Revenue	255.95	592	1,132	1,500	1,500	1,500	1,500	1,500	1,500
Profit/Loss	(-) 39.09	(+) 116.65	(+) 333.79	(+) 360.33	(+) 360.33	(+) 360.33	(+) 360.33	(+) 360.33	(+) 360.33
Cumulative	(-) 39.09	(+) 77.56	(+) 411.35	(+) 771.68	(+) 1,132.01	(+) 1,492.34	(+) 1,852.67	(+) 2,213.00	(+) 2,573.33

Source: MDDB/OVOW Documentation

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APPENDIX IV B (2)
(Rs. in thousand)

GCOGF JAMNAGAR
ACTUAL AND PROJECTED COSTS FOR TOTAL OPERATIONS

	1981-82 (Actual)	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Raw Material (MT)	13,077	29,280	56,600	75,000	75,000	75,000	75,000	75,000	75,000
Variable Costs									
Power and fuel	16.45	36.83	71.19	94.34	94.34	94.34	94.34	94.34	94.34
Stores	0.25	0.56	1.08	1.43	1.43	1.43	1.43	1.43	1.43
Labour	4.00	8.96	17.31	22.94	22.94	22.94	22.94	22.94	22.94
Sub Total	20.70	46.35	89.58	118.71	118.71	118.71	118.71	118.71	118.71
Fixed Costs									
Wages	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.37
Salaries	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
Repairs & Maint.	4.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
Admn. OH	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
Depreciation	34.21	24.24	24.24	24.24	24.24	24.24	24.24	24.24	24.24
Sub-Total	50.95	38.98	38.98	38.98	38.98	38.98	38.98	38.98	38.98
Capital Payments									
Principal	-	-	-	19.72	21.43	23.29	25.31	27.51	29.90
Interest	-	-	-	17.86	16.15	14.29	12.27	10.07	7.68
Sub-Total	-	-	-	37.58	37.58	37.58	37.58	37.58	37.58
Total Cost	71.65	85.33	128.56	195.27	195.27	195.27	195.27	195.27	195.27
Cost/MT	547.90	291.42	227.14	260.36	260.36	260.36	260.36	260.36	260.36
Revenue									
Processing Charges	30.26	67.75	130.97	173.55	173.55	173.55	173.55	173.55	173.55
Storage charges	7.23	16.19	31.29	41.46	41.46	41.46	41.46	41.46	41.46
Sub-Total	37.49	83.94	162.26	215.01	215.01	215.01	215.01	215.01	215.01
Profit/Loss	(-) 34.16	(-) 17.58	(+) 2.41	(+) 19.74	(+) 19.74	(+) 19.74	(+) 19.74	(+) 19.74	(+) 19.74
Cumulative	(-) 34.16	(-) 49.33	(-) 49.33	(-) 29.59	(-) 10.12	(+) 9.62	(+) 29.36	(+) 49.10	(+) 68.84

MADHYA PRADESH STATE OILSEED GROWERS FEDERATION LIMITED
UJJAIN PLANT
PROJECTIONS OF TOTAL OPERATIONS

APPENDIX IV B (3)

(Rs. in thousand)

	1	2	3	4	5	6	7	8
Raw Material ('000 MT)	48	55	63	72	83	95	100	120
Raw Material Cost	1,440	1,650	1,890	2,160	2,490	2,850	3,300	3,600
Variable Costs								
Hexane	18.25	20.90	23.94	27.36	31.54	36.10	41.80	45.60
Consumable	12.00	13.75	15.75	18.00	20.75	23.75	27.50	30.00
Power	5.00	5.73	6.56	7.50	8.64	9.89	11.46	12.50
Water	1.00	1.14	1.31	1.50	1.73	1.97	2.29	2.50
Fuel	16.00	18.31	20.98	23.98	27.64	31.64	36.63	39.96
Wages	6.00	6.87	7.87	9.00	10.37	11.87	13.75	15.00
Sub-Total	58.25	66.70	76.41	87.34	100.67	115.22	133.43	145.56
Fixed Cost								
Repair & Maintenance	12	12	12	12	12	12	12	12
Insurance	8	8	8	8	8	8	8	8
Misc. Exp.	2	2	2	2	2	2	2	2
Adm. OH	12	12	12	12	12	12	12	12
Depreciation	127.5	127.5	127.5	127.5	127.5	127.5	127.5	127.5
Sub Total	161.5	161.5	161.5	161.5	161.5	161.5	161.5	161.5
Capital Payment								
Principal	-	100.50	109.21	118.69	128.99	140.20	152.36	165.59
Interest	-	91.02	82.31	72.83	62.53	51.32	39.36	25.93
Sub Total	-	191.52	191.52	191.52	191.52	191.52	191.52	191.52
Total Cost	1,659.75	2,069.72	2,319.43	2,600.36	2,943.69	3,318.24	3,786.45	4,098.58
Revenue								
Frai Oil	960	1,100	1,260	1,440	1,660	1,900	2,200	2,400
Frai Cake	752	861.67	987	1,128	1,300.30	1,488.33	1,723	1,880
Sub Total	1,712	1,961.67	2,247	2,568	2,960.3	3,388.33	3,923	4,280
Profit/Loss	(+) 52.25	(-) 108.05	(-) 72.43	(-) 32.36	(+) 16.61	(+) 70.09	(+) 136.55	(+) 181.42
Cumulative	(+) 52.25	(-) 55.80	(-) 128.23	(-) 161.59	(-) 145.43	(-) 75.34	(+) 61.21	(+) 242.63

APPENDIX IV B (4)

(Rs. in thousand)

BHAVNAGAR VEGETABLE PRODUCTS UNIT
ACTUAL AND PROJECTED COSTS FOR TOTAL OPERATIONS

	1982-83 (Actual)	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Raw Material	779.16	1,490.14	1,976.40	2,467.97	2,961.83	2,961.83	2,961.83	2,961.83
Variable Costs								
Chemicals	33.20	42.86	59.65	74.21	83.83	83.83	83.83	83.83
Steam	38.85	53.05	75.51	94.48	106.82	106.82	106.82	106.82
Power	26.90	58.43	83.82	105.49	121.43	121.43	121.43	121.43
Stores	13.84	14.38	21.63	27.71	29.94	29.94	29.94	29.94
Production Labour	8.00	9.24	13.83	17.70	18.89	18.89	18.89	18.89
Packing Cost	95.22	162.75	220.88	277.47	319.85	319.85	319.85	319.85
Cess	43.43	83.53	109.90	137.11	164.17	164.17	164.17	164.17
Sub-Total	259.44	424.24	585.22	734.17	844.93	844.93	844.93	844.93
Fixed Cost								
Salary	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10
Admn OH	26.72	26.72	26.72	26.72	26.72	26.72	26.72	26.72
Depreciation	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00
Sales OH	10.95	10.95	10.95	10.95	10.95	10.95	10.95	10.95
Sub-Total	142.77	142.77	142.77	142.77	142.77	142.77	142.77	142.77
Capital Payment								
Principal	-	-	-	43.99	47.81	51.95	56.47	61.37
Interest	-	-	-	39.84	36.02	31.88	27.36	22.46
Sub-Total	-	-	-	83.83	83.83	83.83	83.83	83.83
Total Cost	1,181.37	2,057.15	2,704.39	3,428.74	4,033.36	4,033.36	4,033.36	4,033.36
Revenue								
Sale of Products	1,005.65	1,918.09	2,555.23	3,190.65	3,826.47	3,826.47	3,826.47	3,826.47
By Products	30.83	37.40	49.92	62.65	74.96	74.96	74.96	74.96
Processing & Packing Charges	128.67	98.10	169.11	216.49	216.49	216.49	216.49	216.49
Sub-Total	1,165.15	2,053.59	2,774.26	3,469.79	4,117.92	4,117.92	4,117.92	4,117.92
Profit/Loss	(-) 16.22	(-) 3.56	(+) 69.87	(+) 41.05	(+) 84.56	(+) 84.56	(+) 84.56	(+) 84.56
Cumulative	(-) 16.22	(-) 19.78	(+) 50.09	(+) 91.19	(+) 175.70	(+) 260.26	(+) 344.82	(+) 429.38

C. State Federations

The federations of Gujarat (GROFED), Madhya Pradesh (OILFED), Tamil Nadu (TANCOF) and Andhra Pradesh were visited. There are a number of findings common to all the federations which will be reviewed in detail.

The most significant problem identified is the inadequate financial management that pervades the federations. For example, a budget document is not utilized as a planning tool to specify, and itemize, goals, objectives or priorities for a fiscal year. Rather, it is viewed as a meaningless exercise to satisfy a requirement of NDDB/OVOW. The budgets provided for review had been done in October 1982 under a certain set of assumptions, but had not been revised through May 1983 even though the original assumptions had altered dramatically. There was no evidence of the use of a monthly budget cash flow to assess projected requirements throughout the year. In addition, the federations do not make use of a monthly variance report which indicates by budget item the expenditures against the monthly cash flow for the month, the difference, and a year to date comparison of budget, expenditures and differences. Under the proposed Multiyear Operational Plan a quarterly variance report is planned. This should provide useful financial information to NDDB/OVOW for managerial decisions. This presupposes the reports are submitted by the federations in a timely and accurate manner and reviewed and analyzed by OVOW.

There is limited long range planning performed at the federation level. There are few analyses or projections done three, four or more years into the future regarding the financial implications of procurement, share capital, capital construction or the viability of the processing plants. In fact, the processing plants are usually projected to be operating at full capacity and earning a profit when historically this has yet to occur (see Processing Plant Evaluation).

The accounting performed for certain funds is not sufficient. There should be a relationship between the original budget and the actual expenditure for each capital item. Furthermore, separate ledgers and bank accounts should be maintained for NDDB/OVOW funds like share capital, procurement and other grants. Currently these monies are commingled and to obtain a separate accounting it must be reconstructed (see Share Capital review). The federations are only partly at fault for this situation because NDDB/OVOW has not provided a list of the prescribed accounting standards.

In addition, the technical approach to the preparation of the balance statement and profit and loss statement requires a review because the figures can be misleading. For example, the Madhya Pradesh (OILFED) Profit and Loss Account Report for the period November 1, 1981 to October 31, 1982 shows a profit of Rs. 51 lakhs. This is not a profit at all but, rather, a total cost of operation for the year. The profit number has been placed on the total line. Furthermore, the statement shows a net profit of nearly Rs. 41 lakhs related to the sale of the donated refined soybean

oil. This represents 62% of the total profits (66 lakhs) listed. This is not a profit in the truest business sense where goods or services were sold at a price greater than the cost of production. These funds are income but they should not be considered profits and they should be separately identified because they artificially inflate the profit side of the profit and loss statement. If one wished to make a realistic assessment of a federation, these funds would have to be subtracted.

The Madhya Pradesh situation becomes even more complicated when the funds they received from the National Cooperative Development Corporation (NCDC) and the state government are added in their Balance Sheet as of October 31, 1982. They list under "Paid Up Share Capital" funds received from NDDB/OVOW, NCDC and the Government of Madhya Pradesh. These monies, although labeled as share capital, are not share capital as defined by NDDB. These include loans from the state, capital construction monies from NCDC, profits to be reimbursed to society members and funds available for procurement. These are not the type of funds which can be planned to be available each fiscal year so they must be reviewed carefully when analyzing the total federation. Because of the way the accounting is performed it is difficult to understand what a profit means when it appears on a statement.

The Gujarat federation, on the other hand, uses consistent definitions and does not have the external funding arrangements of Madhya Pradesh. In 1981-82 the federation lost Rs. 322 lakhs and

the projection for 1982-83 is a loss of Rs. 300 lakhs. The losses, in these instances, are the result of carrying stocks from one fiscal year to another. Presumably, if the stock does not spoil and depending upon the market price, the supply will be sold in the new fiscal year and income will be generated to reduce the projected losses.

Although TANCOF did have audited financial statements available, they could provide no detailed budget or expenditure information for the current fiscal year. The federation is in operation for two years and the sale of soybean oil began in June 1982. They expect the sale of the refined oil to provide the "seed money" to fund other activities. They were unable to provide any profit or loss information to review. Such data would probably be trivial considering the limited period of time they have been in operation. In any case, it is a problem that routine financial information is not available.

The individuals responsible for the budgeting and accounting functions at the different federations are not strong professionally. There is a severe lack of knowledge regarding the importance, need and uses of a budget. Several of the definitional and technical problems related to accounting were discussed earlier. There is no consistency among the federations in the manner in which data is transmitted to NDDB/OVOW. This, once again, is partially the fault of NDDB/OVOW for not providing some

direction. Nevertheless, it would seem that the financial managers at the federations would ask for clarification if they did not understand the proper way to submit information.

Not a single financial manager was interviewed who had a complete knowledge of his responsibilities, his role in the organization, or his need to monitor and review the submission of data from the field. There were complaints heard about the inaccurate information being submitted by field personnel. These kinds of problems should be anticipated in such an organizational structure and should be the responsibility of the chief financial manager to address them.

It will be critical to the success of this project that strong financial management personnel be available within OVOW and the federations. The OVOW should have a cadre of financial people in house who perform financial analyses, do management studies, provide policy direction to the federations, assist the federations in selecting their financial staff, write prescribed budget and accounting procedures to follow and insure their implementation.

The financial management problem starts at the top of the federation hierarchy with the Board of Directors. There are apparently no Boards of Directors which have a professional financial person as a member. This is absolutely essential to the proper management of the organization. If such a member were to begin demanding timely and accurate financial data, this would help strengthen the entire

perspective of the financial management team within a federation. Such a board member might be able to provide some direction regarding financial policies to pursue or analyses which need to be done. Unless there is some guidance provided from somewhere, and there has been very little, if any, from NDDB/OVOW and the Board of Directors, the problems reviewed will continue.

The NDDB/OVOW nominates three members to each federation's Board of Directors. This provides NDDB/OVOW with every opportunity to make certain that one of its selections is a strong, experienced and prominent financial manager.

D. A New Approach to Budgeting

The objective of this report is to discuss a revision to the way the Multiyear Operational Plan is reviewed budgetarily. Currently, each action item contains a budgeted amount projected through the termination date of the project. Included within each item are funds for developmental, operational and capital activities. Before proceeding it is necessary to define each of these terms.

Developmental activities are those with impart new skills, abilities and knowledge. These acquired attributes then serve as a basis for performing functions or initiating ventures not previously feasible. Such developmental activities become the infrastructure for any new project and must be in place for the project to succeed.

Operational activities are those which must be conducted in the normal business environment on a daily basis. The costs associated with these activities are those which one would normally evaluate in a profit/loss sense.

Capital activities are those involving the large expenditures of money for construction, procurement, acquisition of land or buildings. Unlike developmental and operating activities which must be done to optimize business performance, capital related items can be delayed, postponed indefinitely or accelerated depending upon the set of assumptions made.

It is recommended that each budget (action) item be reclassified into one of the three major purposes or major activity areas of the project; developmental, operational and capital (see Appendix IV D (1)). Therefore, any action item which contains budgeted funds for more than one major purpose activity will be reassessed and the funds realigned. For example, within the total budget for processing facilities is a Rs. 700 million amount for capital construction. This amount would be moved to the capital major purpose while the remainder of the budget moves to the developmental major purpose.

One error that has been made since the inception of this project has been to try to evaluate its success or failure in terms of a bottom line profit or loss number. With a project of this magnitude and complexity a bottom line number will be a perversely distorted figure. This is because the Oilseed Vegetable Oil Wing (OVOW) has undertaken certain developmental activities like cooperative development, manpower development, market research and product and process development. These functions would normally be funded and performed by a governmental agency interested in promoting a particular scheme. Similarly, the OVOW has assumed the extensive capital costs of rehabilitating existing processing plants and constructing new facilities.

There is no profit to be earned in performing developmental or capital activities. They create and provide for the infrastructure necessary to accomplish project goals but they do not generate

revenue. It is therefore budgetarily improper to have action items which contain portions of all these elements. They must be segregated, where possible, according to the activity that is being performed.

When examined in this manner the profit and loss aspect of the project would be evaluated against those activities considered to be operational in nature. In addition, having the budget divided into three major purposes provides greater budgetary flexibility to the managers of the project. They could move funds from one action item to another within the same major purpose without restriction.

This flexibility will be particularly important as the project approaches its termination date and large sums of capital are required for raw material procurement. It may be necessary to move funds initially budgeted for share capital, operational losses and construction to procurement or interchange them in other ways. The funds should not be considered encumbered to the action item for which it was originally budgeted.

It is the understanding of CLUSA and NDDB that a USAID restriction of 15% exists in the transfer of funds between action items. This restriction should be reconsidered and reevaluated in light of the new major purpose budget described above.

The following lists the three major purposes and the action items contained within each.

Developmental

Manpower Development

Product and Process Development

Market Research and Testing

Management Training

Cooperative Development

Production Enhancement

Operating

Operations Research and

Information Systems

Project Management

Capital

Processing Facilities

Federation Share Capital

Capital Procurement

Operational Losses

Capital Construction

A peripheral issue to be addressed by USAID and CLUSA which directly affects the budget for the Multiyear Operational Plan is a definition of the beginning and end dates of the project. The first involvement of NDDB in the project was in 1977. The first shipment

of soybean oil to arrive to India was in June 1979. The funds generated from the sale of the refined oil did not substantively materialize until 1980. Therefore while the project goals may have been altered or changed slightly with the passage of time, the ability of OVOW to achieve them will depend upon when the project dates are defined.

It would not seem unreasonable to assume that the project officially begins, as far as USAID involvement is concerned, when the oil was sold and sufficient rupees generated to commence major funding of the action items. If this is the case then the project actually became operational sometime in 1980-81 with an end of project date of 1987-88. Trying, however, to evaluate this project over a seven year period, whatever the years, is unrealistic.

The project plan has set out a number of goals and targets to be achieved based upon a certain set of assumptions. Many of the assumptions are tantamount to an expected revolution in the way producers use their agricultural lands, the way raw materials are processed and finished products are marketed. These activities will certainly take more than seven years to achieve, if they can be attained at all.

A perfect example of this situation is the processing facilities which are being constructed. A plant opening in 1983, for instance, does not begin paying the principal and interest on its loan until 1985 because of a two year grace period provided by OVOW.

Thereafter the loan must be repaid completely within 3 years. The time frame has now been extended 10 years to 1993 and it is still not assured that the plant at that time will have accomplished each objective set out in 1979.

There is no question that this project has long term implications for the Government of India and the USAID administration must decide if the project should be supported beyond the earlier defined seven year period. It is recommended that USAID involvement be continued beyond the current termination date of the project because many of the ambitious plans of OVOW cannot be achieved within a seven year time frame. Furthermore, additional support beyond the 160,000 metric tons may be required to support the achievement of all the project goals.

(3) Publications

(4) Advertising

(5) Travel/Transport

MANPOWER DEVELOPMENT

1. Developmental:

(1) Salaries (Capitalisation)

(2) Curricular Development

(3) Training Expenses (Tution, Food/Transport)

PRODUCT & PROCESS DEVELOPMENT

1. Developmental:

(1) Salaries

(2) Travel

(3) Publications

(4) Equipment

(5) Other facilities

MANAGEMENT TRAINING

1. Developmental :

(1) Estimated expenses per student, which includes:

- Tution
- Computer fees
- Teaching Material
- Room & Electricity

- Field Study/MTS expenses
- Student Welfare Fund
- Food at Anand

COOPERATIVE DEVELOPMENT

1. Developmental :

Seed money for

- Commodity or Resource Studies
- Initiation of pilot projects

The cost includes Salareis, Travel & Transport, Data Analysis, Publications, Communication, etc.

E. Financial Management of Program Activities

The current structure for the disbursement of funds segregates action items 1 through 7 into a Special Accounts I and actions items 8 through 12 into Special Accounts II. The genesis for this arrangement was the distinction made for monies generated by the landed value (Special Account I) of the commodity and the actual sales proceeds in excess of the landed value (Special Account II).

If the major purpose concept of budgeting is adopted (see Section IV D), the aforementioned segregation would be dropped. In its place would be three groups: developmental, operational and capital, which would each have the appropriate action item budgeted within the respective major purpose. This would provide management with maximum flexibility to move funds within each major purpose.

The revenue generated would be placed into one special account from where the funds would be drawn to support the three major purposes and the 12 action items.

The revolving fund would operate for loans and advances made to state federations. These would include, but may not be limited to, procurement and capital construction. Since all activities emanating from the revolving fund involve the major purpose capital it would be necessary to set up a separate ledger for capital

related items. Payments would be made from funds drawn from the special account and transferred to the major purpose capital and the particular action item.

The repayment of interest and loans to the revolving fund would involve a credit to the revolving fund account. Interest earned on bank accounts would also be credited to the revolving fund account. All inflows of monies (repayments, interest) would accrue to the major purpose capital and to the particular action item from where the funds were originally debited. In this manner the timely repayment of funds could conceivably reduce the total cash flow requirement during a fiscal year. This situation will not arise until all outstanding loans are in a repayment status, perhaps in three years.

The aforementioned procedures would replace the current practice of dealing with separate special accounts. In addition, it would treat all reflows -- interest on loans and bank accounts and principal loan repayments -- the same. There is no reason to treat any of the income sources differently. All monies are procured and utilized for the funding of the project's activities. Therefore, as long as the various sources can be identified and credited properly the funds should be treated in the same manner.

Accounting at the Federation Level

Each state federation will be required to keep separate ledgers for the expenditures of monies related to the major purpose capital - procurement, share capital, construction, operational losses. When the loans are received from OVOW the appropriate entry should be made in each ledger. Similarly, when principal and interest are repaid it must be reflected in the appropriate ledgers. Currently, there are no budget or accounting requirements for certain major purpose capital items like share capital. This situation can be rectified by having state federations submit detail budgets to OVOW for approval before any funds can be released. The accounting of the monies through separate ledgers will enable OVOW to evaluate and monitor expenditures against budget. This will improve the management of the project (refer to the new budgeting format).

Summary of Financial Evaluation

Recommendations

1. There is need for an additional 37,000 MT of soybean oil above the original agreement of 150,000 MT. This would generate Rs. 48 crores and eliminate the projected budget deficit.

2. State federations should be divided into geographical regions, and the processing plant unit managers should be given semiautonomous jurisdiction within their area. Any movement of raw materials or finished products across regions would be decided at the federation's headquarters.

3. Guidance and direction is needed from OVOW regarding the type of financial analyses needed to assess the viability of processing plant proposals. In addition, minimum budgetary and accounting standards should be established for all processing plants. The GROFED reimbursement policy to its processing plants needs to be examined because the existing method ensures operational deficits.

4. A computerized financial planning model needs to be developed.

5. To maximize profits, the fixed costs per metric ton must be kept low, which requires optimal plant utilization. In addition, the

timing of the purchases of the raw material to be crushed and the selling price of the final product are critical elements in the profit margin.

6. Strong financial management personnel are needed within OVOW and the state federations.

7. OVOW should nominate prominent financial managers to the Boards of Directors of each state federation.

8. The MYOP budget should be redefined into three major purpose areas: developmental, operational and capital. All the action items would be realigned into these classifications. This would provide maximum budgetary flexibility for the project's management.

9. The funding for action items from two segregated accounts should be ended and replaced by the major purpose concept of budgeting.

10. All revenue produced from interest on loans and bank accounts and principal loan repayments should be treated the same.

V. SUMMARY OF RECOMMENDATIONS

Processing Facilities

Materials handling systems as they now exist for incoming oilseeds, in-process material, and finished products are uneconomical. Mechanization of handling, bulk storage and running the solvent plant to extract the cake as it is produced will save labor and, more importantly, improve the solvent extraction efficiency, improve the quality of the solvent extracted oil, and eliminate the expense of buying the gunny bags.

Hexane losses are high in the solvent plants. The greatest single cause is the intermittent plant operations. The intermittent operation is due to the lack of raw materials, insufficient electricity to run the plant as a unit, power failures and the imbalance between the production of cake and the needs of the solvent plant. Correction of these conditions should have high priority.

Safety of equipment in some of the acquired solvent plants is still a problem. In some solvent plants belt-driven pumps and speed reducers still exist. However, plans are to change these units as replacement equipment is available. Some progress has been made on ths problem since it was first pointed out by the operations research study, and this aspect of safety is being taken care of in the new facilities.

Materials handling is mostly by manual labor and is very inefficient. In some instances the cake from crushing is bagged and stored for as much as 15 days before it is solvent extracted. The cake should never be allowed to cool as it then generates fines when it is milled which reduce drainage in the extraction process and increases the energy required to keep the extractor up to normal operating temperature.

There is still a problem with the cumbersome procedure for obtaining licenses to establish and operate a processing plant. In most instances the local, state and national governing bodies require a number of licenses and permits which usually causes a year or more delay on each new facility project. It is recommended that the government streamline these procedures.

Operations Research and Information Systems

If the MIS system is to be established and used as the basis for managerial decision making by OVOW and for Operations Research Studies then the experience learned with Bhavnagar should be educational. For example, any federation contemplating its implementation should begin an indoctrination process of the secretaries. They should understand in advance why the system is necessary, its objectives, and how the system will benefit and serve their needs. The training should be of a continuing nature until

complete familiarity with the forms is achieved. When a village secretary is identified as having provided incomplete or inaccurate data, he should be visited and given a training session. This whole process is much more successful, with less resistance, when the system takes account of the needs of the various users.

It is recommended that during the early implementation of MIS, within each of the state federations, that the proposed MIS forms be consolidated and streamlined so that only the most important and relevant data affecting decision making be collected initially. As the users become more familiar and experienced with the system other data elements can be added.

It should be noted that the approach followed by the Gujarat Federation is viable. They proceeded in a phased manner and addressed problems as they arose. For example, when resistance was encountered with village secretaries they sent teams out to conduct on site training sessions. Two things which should be done are a more comprehensive explanation to the users regarding the need for the system and a simplification of the forms, which might accelerate their acceptance.

The project would likely benefit from an ongoing program of OR linked with the MIS data and centralized at NDDB/OVOW. While some projects might be more reasonably given to outside consultants, it is probable that more practical and meaningful results would come from an in-house group which is very familiar with project

operations and needs. OR work should focus on specific project and federation problems (for example: procurement, storage, processsing, pricing, etc.). It should be concerned with the development of management tools which allow more rapid and complete assessment of changes in assumptions, prices and policies on project objectives and financial viability. OR work might be efficiently linked with the recommended work on market analysis and forecasting.

Marketing Operations, Research and Testing

Reassessment of Projected Project Revenues: The original assumptions regarding revenues to be earned from project marketing activities, including sales of donated, commercially procured, and project-produced oils and products, need considerable adjustment. The net effect of the changes on total project revenues and project viability at current funding levels is uncertain and must be carefully evaluated. The fact that the original budgets projected revenues (and costs) in constant 1978/79 prices makes comparison of the budget with actual revenues (and costs) evaluated in current prices very cumbersome. Re-estimation of the budget in current prices would appear to be a practical exercise.

Reassessment of Buffer Stock Policy: It is not clear that the proposed operation of "localized buffer stocks" is either feasible or in the best interest of the project. To the extent that the operation of buffer stocks would involve something other than profit

maximizing decisions on holding and releasing stocks, the project may not be able to afford it. Price stabilization programs are more appropriately and effectively conducted at the national level. Operation of a regional buffer stock in competition with the STC would appear to be futile. It is suggested that the project's real contribution to producer and consumer welfare will be through the effective implementation of its efforts to enhance oilseed productivity and that project resources should be focused on these efforts.

Accelerated Development and Marketing of Higher-Valued Uses For Non-Oil By-Products: The marketing of vegetable oils at remunerative prices in India is much less of a problem than is the marketing of non-oil by-products. The development of higher-valued products and markets for protein meals and waste products (i.e. groundnut hulls) could be particularly effective in improving overall marketing margins and in reducing pressures on oil prices. It is recommended that the project accelerate its efforts to improve the acceptability of its oilcakes and extractions in higher-priced foreign markets, to develop and market higher-valued human foods, particularly dal analogs, from protein meals, and to find higher-valued uses for waste products.

Centralization of Market Analysis and Forecasting Functions: The federations could obtain a significant competitive advantage in the marketing of their products through the centralization of some market analysis and forecasting functions around the NDDB computer

facility. Supply and demand conditions for oilseed and products in India and in world markets are notoriously difficult to predict. The cost of good information, including data collection, processing and analysis, can be very high. A core group of well trained analysts and econometricians with access to computer facilities, could reduce the cost of collecting and analyzing the large amounts of available information and improve the quality of forecasts available to the federations. It is important that the work focus on meeting information needs and solving the practical problems identified in collaboration with federation-level analysts.

Procurement Operations and Finance

Reassessment of Procurement and Processing Capacity Targets

The project may benefit from a careful reassessment of both procurement and processing capacity targets in each state. It is recommended that this be the topic of a major Operations Research Study. The following factors lead to this conclusion:

(a) Achieved levels of procurement to date have been below target. Levels of procurement will be very difficult to predict with certainty. In the early stages of the project, procurement levels in each state will be heavily dependent on the rate at which more area is organized under the project, as well as levels of production. Other factors will be achievements in terms of oilseed area and yield per member and procurement per member - all of which

appear to have fallen below projected levels to date. As state federations become more completely organized, procurement will depend primarily on production gains achieved by their members, something which will be uncertain and difficult to predict. Procurement levels and utilization of planned processing capacity appear particularly vulnerable in Madhya Pradesh because there is considerable uncertainty about the achievement of targeted levels of soybean production.

(b) Oilseed production and procurement is likely to remain subject to variability. More production under irrigated conditions will reduce variability but a major portion of the area under the project will be rainfed.

These factors have implications for levels of planned processing capacity as well as the size of individual plants. Larger plants may be appropriate in irrigated areas where production, procurement and optimal capacity utilization are more certain. Smaller plants may have a better chance of running at optimal capacity in rainfed areas where production is unstable.

It would appear much less risky to the project to err on the side of underinvesting in processing capacity, and possibly, foregoing some profits that might be earned from processing than to overinvest and incur losses stemming from low capacity utilization. This requires further analysis.

Reassessment of Procurement Pricing Policy

The project would benefit from the development of a clear and appropriate procurement pricing policy which would, preferably, be adopted by all state federations. The suggested elements of that pricing policy are as follows:

(a) The establishment of a minimum support price based on estimated average costs of production which would be announced before each crop year. Cost of production surveys would have to be conducted for this purpose. Ideally, the same price based on national average costs and yields would apply to all States. However, if it is determined that distortions in factor or product markets lead to significantly different production costs in some areas, then different support prices might be used in different areas. The support price should be based on estimates of the cost of the average level (not the recommended level) of variable inputs used during the crop year and average yields. It is not recommended that a risk factor be added to estimated costs because it would be a bonus to irrigated producers and may serve to replace efficient risk and drought management on the part of rainfed farmers. The purpose of the support price would be to establish for producers a price below which the federations will not allow prices to fall during the marketing season.

(b) Procurement should be conducted strictly at market prices based on daily prices in a central market in each State. Federation levels of procurement and prices paid should be made available in markets as quickly as possible so that actual market prices can reflect these transactions. Farmer members should be provided with local market prices daily so that they have the necessary information on which to base their marketing decisions. Consideration should also be given to having the farmer pay a share of the federation's transportation and local handling costs. There does not appear to be a good reason why the federations should be subsidizing these costs to the farmer and effectively boosting prices received by farmers above the market. The real inducements for selling to the federation should be objective grading, convenience, the possible end of year bonus, and access to inputs and extension services.

(c) Procurement should be conducted year around.

It is felt that these policies will provide adequate incentives to producers and be more efficient than existing policies. Market pricing coupled with increased attention to raising productivity will be more consistent with national policy objectives and with achieving both the producer and consumer oriented goals of the project.

More Budgetary Flexibility for Procurement Financing

It is recommended that NDDB/OVOW be given more flexibility to shift funds within the capital major purpose to support procurement financing. The fact that per unit procurement costs have been higher than expected, that procurement and procurement prices are likely to be variable, and that the currently budgeted Rs. 425 million will be insufficient to support project procurement operations suggest that this flexibility is necessary. It can be argued that more of the funds generated from the sale of donated soybean oil should be made available for procurement because the sale of the donated soybean oil at higher than expected prices also meant that project operating capital requirements for processing domestic oilseeds were also going to be larger than expected.

Development of a Clear NDDB/OVOW Policy on the Conditions for Release of Procurement Funding to the Federations

NDDB/OVOW is essentially in the position of banker in lending funds to federations for procurement. Appropriately, NDDB/OVOW must be assured that federation management and policy decisions are sound and contribute to financial viability. Successful procurement will depend on timely transfers of procurement funds, and NDDB/OVOW policies which are clear enough to permit effective planning by the federations.

It is recommended that NDDB/OVOW request a detailed proposal for the expenditure of all funds related to the capital major purpose which includes share capital, procurement funds, capital construction and

operational losses. The disbursement, budget and accounting of these monies should be carefully controlled and monitored. They should each be segregated into separate accounts at the federation level for auditing purposes. Through strict monitoring the NDDB/OVOW will be better able to assess its procurement requirements each year and plan to interchange monies, if necessary, to procurement from the other action items within the capital major purpose.

Gradual Reduction of NDDB/OVOW Procurement Support to Federations

It is important that the state federations begin utilizing, to the extent possible, the commercial vehicles for procurement. This need not occur at once, but NDDB/OVOW should schedule a phased-in approach, whereby they would provide only a certain percentage of a federation's requirement, which would be directly related to the length of time a federation has been in operation. Therefore, a federation in existence for four years would not be eligible for the same percentage of procurement assistance as a federation operating for one or two years. By the end of year seven no support would be available from NDDB/OVOW. The interest rate for the loan would escalate each year until year seven when it equalled commercial rates. If this scheme is determined to be desirable, it should be formulated as a policy and communicated to the federations so they have sufficient lead time to plan for it. If this is done, it will go a long way toward ending the misconception of several federations that NDDB/OVOW has an inexhaustible source of funds.

Product and Process Development

Product and process research and development resources available to the project should be focused on solving key marketing and processing problems having the highest likely payoff in terms of the long term financial viability of the project. These problems would appear to include increasing the value and marketability of oil cakes and extractions, and finding higher valued uses for non edible by products.

Constraints on the availability of foreign exchange and, therefore, access to technology available elsewhere in the world should be eased by any means possible. An increase in foreign exchange funding and/or entry into collaborations/joint ventures with foreign companies are possible options.

Production Enhancement

It would appear that a strategy to stabilize year to year yields at a moderate level in strictly rainfed areas would be a better approach than trying to substantially increase annual yields. Even then it must be recognized that there will be years when, due to very low rainfall amounts, or very poor distribution of the total rainfall received, yields will be very low and failures will occur in less favourable situations.

Advanced planning will be needed to ensure early returns from research efforts. The National Research Institute for Groundnuts must be urged to develop short duration varieties of groundnuts that are resistant to cercospera leaf spot, rust, and alternaria leaf spot. These varieties should be screened for high levels of seedling vigor and deep root systems. Research on seed drying and seed storage should also be initiated.

If it has not already been done then the government should be urged to undertake hydrological surveys of the entire project area to locate all underground water. (We understand the federation is planning to request such studies.)

Studies should be initiated on inexpensive, low power, highly efficient means of distributing water on small farms with wells.

The Gujarat State Government should be encouraged to transfer the balance of the Talaja State Farm to the federation. It could then serve a very useful function as a training, demonstration, and seed production centre.

There is need for a Ph.D. level staff member in a high level position at GROFED headquarters to provide liaison between the

federation and research organizations. He would also supervise the applied research, and demonstration program as well as the seed multiplication and improvement work. He could provide guidance and direction for the training of agricultural staff members.

Manpower Development

If well qualified society secretaries cannot be recruited, those recruited should be given adequated training to perform their functions with a minimum of supervision or assistance from the extension staff.

The number of mobile units need to be increased and each mobile team should be staffed with at least one qualified agriculture graduate.

Where it is necessary to staff agricultural positions with non-agricultural candidates intensive formal training in agricultural subjects should be arranged for them.

The agriculture extension workers need strong technical backstopping from a federation and/or district level agriculture staff in order to keep them well informed on adapted technology.

Operational Losses

It has not been determined by NDDB/OVOW whether to treat these monies as a 70% loan - 30% grant or as a total grant. It is recommended that when, and if, these funds are utilized it should be on a loan basis. If the purpose of the operational loss component is to minimize such losses through careful planning and effective management then a loan is the only mechanism that will act as a disincentive for failure. Otherwise, with a grant, there is no penalty imposed for poor management.

The operational loss action item, as conceived, is basically an insurance policy against unexpected calamaties. This responsibility more appropriately belongs within each state federation because that is where the authority lies to address such matters. There is no reason to have NDDB/OVOW viewed by the states as a "bailout" mechanism for problems they cannot resolve. It is, therefore, recommended that the operational loss action item be discontinued and the monies be reallocated to the development major purpose. Any risk, and therfore any substantive loss, by either NDDB/OVOW or the state federations will be with developmental activities, i.e., new products, creating a national oilseed and oil grid, etc.; so the monies should be located where they will have the most use.

Federation Share Capital

There should be a NDDB/OVOW policy of relating share capital disbursements to a state federation to the progress a federation makes in meeting its planned society and membership targets. In this manner there will always be an incentive for a federation to increase and improve its membership.

The OVOW should issue a policy mandating that an itemised budget be prepared, submitted to and approved by OVOW before the share capital can be spent. This may seem an unnecessary control but since one objective of the share capital concept is to ensure "State Federation Discipline", this is the one mechanism to accomplish that end. If OVOW does not exercise its fiscal responsibilities, it will not be able to control and manage the project effectively. Furthermore, OVOW should mandate that share capital monies be deposited into an auditable, segregated account so expenditures can be monitored against the budget. These funds must not be commingled with other monies.

The NDDB/OVOW should issue a policy mandating that any investment by state federations of share capital, procurement and other NDDB grants must be approved by the Board of Directors of the

Federation. The Managing Director should not be able to invest large sums of money (currently up to 10 lakhs) without prior approval of the Board of Directors. Any funds invested by the federation should be secured and guaranteed against losses. The investment guarantee should be in writing to minimise the federation's liability. If all the Board members are not available to render a decision than a quorum will be sufficient. The Board of Directors is the governing body of the federation and, therefore, should approve all financial investments.

Project Management and Implementation

The audit problems which have plagued the project by creating a continual atmosphere of uncertainty regarding project funding must be resolved as quickly as possible. The project will have little chance of meeting its objectives unless a clear and final solution to the audit issues is found quickly and the project staff can apply itself to solving substantial problems.

There is, ambiguity as to AID's role in the project. As the donor agency, AID has a responsibility to ensure that the donated commodities are properly handled and that the proceeds are used for the agreed upon project purposes. The project, however, was established under an agreement between NDDB and CLUSA. CLUSA, as cooperating sponsor, acts as an intermediary between AID and NDDB.

Confusion arises because at times during implementation it has not been clear how much authority AID has vested in CLUSA, or when and for what purposes communication with NDDB is properly through CLUSA and when directly with NDDB. The role of each organization needs to be clearly defined and, understood. It is recommended that CLUSA have sole responsibility for monitoring project progress, providing necessary assistance in matters relating to project implementation, and furnishing all information needed for USAID/Delhi to fulfill its reporting requirements. USAID/Delhi's role would be to ensure that CLUSA has sufficient resources to carry out these functions.It is recommended that a simple reporting system be developed jointly by AID, CLUSA, NDDB and CUC/CIDA that will meet minimum reporting needs of the USA and Canadian donors from data developed under the projects MIS program.

There must be a firm commitment on the part of the state governments and NDDB/OVOW to place well qualified people in the upper level management positions of the federations, and to keep those people in their positions for at least 3-4 years. Frequent changes in leadership can only hinder the development of financially viable federations by preventing the leadership from gaining adequate expertise in the oilseed industry, by leading to frequent shifts in federation policies, and by preventing the development of a clear sense of purpose and direction among federation staffs.

NDDB/OVOW and the concerned state governments must continue to work together to develop a clear and mutual understanding concerning the

goals and policies of the project and their respective roles in implementing the project. This understanding is necessary in order to prevent possible clashes concerning project policies and the placement of personnel, and to ensure that all parties are working together towards the same goals. Ideally, such an understanding would acknowledge the considerable experience and expertise of NDDB/OVOW in developing and managing financially viable vertically integrated cooperatives, as well as the resources and expertise available to the state governments.

The current organization of the project, whereby project funding is channeled through NDDB/OVOW and NDDB/OVOW is the project's management and funding authority, should not be changed even if a decision is taken to form a National Oilseeds Development Board. The current organization allows the application of NDDB's considerable experience and expertise to the development of financially viable oilseed cooperatives under this project. Any reorganization of project authority at this point would only further delay and confuse the implementation of the project.

The ending dates of the project should be moved back at least 3 years (to 1989/90) because of the unexpected delays in project implementation caused by audit disputes and delays in the formation of state federations. Because of these delays it is no longer realistic to achieve the originally planned end of project goals on the original schedule.

Consistent with current plans, NDDB/OVOW's capacity to provide technical, managerial and planning support to the state federation's should be expanded. Specific areas where NDDB/OVOW's services should be expanded include: financial management and planning; operations research, which assists federations in making sound investments in storage and processing infrastructure, and the provision of market information, analysis, and forecasting, which supports federation marketing and pricing policy decisions. OVOW's linkage with NDDB should be maintained so that the project can continue to take advantage of the efficiencies and expertise afforded by access to NDDB's excellent technical and service divisions.

Financial Management

There is need for an additional 37,000 MT of soybean oil above the original agreement of 160,000 MT. This would generate Rs. 48 crores and eliminate the projected budget deficit.

State federations should be divided into geographical regions, and the processing plant unit managers should be given semiautonomous jurisdiction within their area. Any movement of raw materials or finished products across regions would be decided at the federation's headquarters.

Guidance and direction is needed from OVOW regarding the type of financial analyses needed to assess the viability of processing plant proposals. In addition, minimum budgetary and accounting standards should be established for all processing plants. The GROFED reimbursement policy to its processing plants needs to be examined because the existing method ensures operational deficits.

A computerized financial planning model needs to be developed.

To maximize profits, the fixed costs per metric ton must be kept low, which requires optimal plant utilization. In addition, the timing of the purchases of the raw material to be crushed and the selling price of the final product are critical elements in the profit margin.

Strong financial management personnel are needed within OVOW and the state federations.

OVOW should nominate prominent financial managers to the Boards of Directors of each state federation.

The MYOP budget should be redefined into three major purpose areas: developmental, operational and capital. All the action items would be realigned into these classifications. This would provide maximum budgetary flexibility for the project's management.

The funding for action items from two segregated accounts should be ended and replaced by the major purpose concept of budgeting.

All revenue produced from interest on loans and bank accounts and principal loan repayments should be treated the same.

EXECUTIVE SUMMARY

A. Problem and Overview

During the last decade, India's production of edible oils has fallen increasingly short of demand. Currently an average of 1 million metric tons of edible oils are imported to ensure maintenance of per capita consumption of approximately 50% of nutritional requirements. The Oilseed Growers' Cooperative Project represents the major action program in India's attempt to increase domestic production of oilseeds and oil. Other programs include: oilseed research conducted by the IARI and state agricultural universities; on-going agricultural extension programs the National Cooperative Development Corporation's financing of cooperatively-owned oilseed processing facilities; and various policy measures taken by the Government of India related to import and pricing of edible oils and related products.

B. U.S. Assistance

The Oilseed Growers' Cooperative Project operates through a PL 480 Title II donation of 160,000 MT of refined soybean oil. Commercial sales of oil generate funds for investment in production enhancement, applied research, marketing systems, manpower development, and acquisition/erection of oilseed processing plants. The OGCP is supported by two Operational Program Grants: 1) NDDB OPG (AID-386-2144) which provides dollar funding for technical consultants and U.S. Training for project personnel; 2) the CLUSA Local Support OPG which provides partial funding for CLUSA's role as cooperating sponsor in project monitoring and coordination of technical support to the project.

C. Purpose of Evaluation

The project was initially evaluated in 1981. The current evaluation was a regularly scheduled mid-term evaluation to determine progress in relation to project outputs. A joint evaluation team comprising participants from AID, NDDB, Government of India and CLUSA reviewed achievements and assessed the project strategy through project reporting and documentation available at NDDB, interviews with NDDB and Oilseed Growers' Cooperative Federation staff, field visits to cooperatives, processing units, and research facilities.

D. Findings

The OGCP is an imaginative and ambitious undertaking, basically well-designed and well-implemented.

Project performance has been impressive considering the problems that have affected it.

The original life of project (7 years) assumed simultaneous initiation of project activity in all states. This has not occurred due to constraints imposed by external factors. These setbacks have made it impossible to achieve project goals by 1985-86, but have helped ensure ultimate success.

Specific Project Areas

1. Processing

Current oilseed handling procedures are uneconomical; the process should be mechanized.

Intermittent plant operations due to power problems, capacity imbalances, etc., have led to operating inefficiencies. Power problems could be addressed through co-generation using groundnut shells as fuel.

Project planning by NDDB and the State Federations is good; project plans are technically sound.

2. Financial Management

Long-and short-term financial planning is weak and must be strengthened. A cadre of professional financial analysts should be added.

Decentralization of financial decision-making to the plant level is advisable.

The MYOP budget should be reclassified into three major purposes: developmental; operational and capital, with flexibility given to NDDB within each major purpose.

To ensure seven full years of support to each State Federation, the project period should be extended through 1989-90 and an additional 37,000 MT of RSBO made available to meet full funding requirements.

3. Production Enhancement

Strategy should be to stabilize annual yields at moderate levels in rainfed areas; not to try to substantially increase them.

The National Research Institute for Groundnuts should develop short-duration, disease resistant groundnut varieties.

Hydrological studies should be undertaken throughout the project areas to identify areas suitable for groundwater exploration.

Studies should be initiated on inexpensive, low energy, highly efficient water distribution.

Each federation should have a Ph.D. level staff member to liaise with research organizations and supervise applied research and demonstration.

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Each village society should have storage facilities for inputs.

Input distribution management should ensure members receive inputs in adequate amounts at the right time.

4. Procurement Operations and Finance

Levels of procurement have been below target. To ensure adequate supplies for efficient operation of processing plants, open market buying and selling of oilseeds should be considered.

Flexibility within the major purpose capital item would permit use of additional funds for procurement finance.

Project should adopt uniform pricing policy based on market pricing.

5. Market Operations, Research and Testing

Sales have been below target because of delays and interruptions in receipt of donated oils.

Additional (over Rs.5,500) revenues from oil are consistent with inflationary increases in project costs.

Large scale buffer stocking of edible oils is no longer a viable option because Government of India performs this function.

Occasional state government movement restrictions and requirements to sell through the public distribution system pose a threat to profitable oil marketing. Weak domestic demand for protein meals represent the major marketing problem; development of high-valued domestic uses for protein meal as human food would improve marketing margins.

Centralization of market information, analysis and forecasting functions with a group of well-trained analysts would give the federations a competitive advantage in the market.

E. Project Design and Policy Implications

The evaluation validates the basic design elements: 1) intervention through a vertically-integrated cooperative system addressing production, procurement, processing and marketing; 2) the monetization of commodities both to establish a credible marketing system and generate funds for project implementation; 3) project management by an autonomous institution with greater flexibility than government agencies; 4) project implementation by private, member-owned cooperatives employing professional management.

F. Recommendations

1. Extension of life-of-project by four years, through 1989-90;

2. Commitment of an additional 37,000 MT of Refined Soybean Oil to ensure adequate project funding through the extended period;

3. Reclassification of the budget into developmental, operational and capital major purposes with flexibility accorded within each of these purposes;

4. Strengthening of financial planning, management and analysis capability of NDDB and state oilseed growers' cooperative federations;

5. Production enhancement focus on yield stabilization in rainfed areas;

6. Increased funding for procurement financing, with phase down of project funds as state federations mature;

7. Elimination of buffer stocking operations.

TRC/pv

Attachment 'B'
to PES # 84-2

USAID/NEW DELHI

EVALUATION COST DATA

1. No. and Title of Project/Activity: PL-480 Title II CLUSA/NDDB Oilseed Growers Co-op. Project, and CLUSA Grant No. AID 386-2144 (OPG) India

2. Purpose of Evaluation: To assess the progress of the Project and to prepare future actions supportive of achieving project objectives.

3. Mission Staff Person Days involved in Evaluation (estimated):

- Professional Staff 16 Person Days
- Support Staff 10 Person Days

4. AID/W Direct-Hire or IPA TDY support funded by Mission:

Name	Period of TDY (Person-Days)	Dollar Cost (Travel, Per Diem etc.)	*Source of of Funds
a.			
b.		NONE	
c.			
d.			

5. Contractor Support, if any:

Name of Contractor@	Contract No.	Amount of Contract	*Source of Funds
1. Mr. Maurine Landes	PIO/T No. 498-0249-3-6431045	$20,440	PD and S (498-0249) for PL480 Title II CLUSA/NDDB OGCP Evaluation.
2. Dr. Russel O. Olson 3. Mr. Dwight C. Finfrock 4. Mr. John A. Charda-voyne 5. Mr. Charles V. Hendrix 6. Mr. Travis E. Mitchell	PIO/T No. 498-0249-3-6431044.	$80,340	

* Whether PDS, Mission O.E., Project Budget or Central/Regional Bureau funds.

@ IQC, RSSA, PASA, PSC's, Intitutional Contract, Cooperative Agreement, etc.