

**AIRGRAM**

**DEPARTMENT OF STATE.**

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Reference Room 1656

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DATE RECD.

386-367.5

**PD-AAD-111-E1**

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**TO - AID/W**

**FROM - New Delhi**

**SUBJECT - Oilseeds Processing Proposal**

**REFERENCE - (A) NEW DELHI 1761 (B) STATE 194365 (C) NEW DELHI 13792**

1. Attached PROP Revision submitted per Ref. A.
2. Further investigation suggested per reference B supports PROP submission along lines of Ref C. No alternate counterpart agency has access to a larger segment of total oilseeds processing industry. One full-time specialist can not handle the diverse technology requested by NCD. Short-term consultancy is not expected to achieve coordinated development of technical areas and full payoff from manpower investment.

**KEATING**

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DRAFTED BY <b>JSBalis:pam:</b>	OFFICE <b>AG/ID</b>	PHONE NO. <b>558</b>	DATE <b>2/11/71</b>	APPROVED BY: <b>MINAID(A):LPOechali</b>
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AID AND OTHER CLEARANCES

AG/PA: SLC      AG: 4      DP/P: MC RB

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02/12/71

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DISTRIBUTION  
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**TO -**

**FROM - New Delhi**

**SUBJECT - PROP Revision --  
Agriculture Inputs Development**

**REFERENCE - NON-CAPITAL PROJECT PAPER (PROP)  
= TOAID A-592, 6/26/1969**

**Country: INDIA Project No. 386-11-190-367**

**Submission Date:**

**Project Title: Agriculture Inputs Development**

**U.S. Obligation Span: FY 1967 through FY 1975**

**Physical Implementation Plan: FY 1967 through FY 1976**

**Gross Life-of-Project Financial Requirements:**

U.S. Dollars:	\$ 4,233,000*
U.S. owned local currency	Not applicable
Cooperating Country Contribution	\$ 2,783,000 (Equiv.)*
Fourth Five Year Plan	Not applicable
<b>Total Cost</b>	<b>\$ 7,016,000*</b>

**\*Aggregate for the Agriculture Inputs Development Project, including Oilseeds Subproject.**

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DRAFTED BY <b>JSH:sl</b>	OFFICE <b>AG/ID</b>	PHONE NO. <b>X-558</b>	DATE <b>2/12/1971</b>	APPROVED BY: <b>MINAID/A:LP Oechali: <i>MO</i></b>
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**AG/PA: *Sh* AG: OABauman: *J* DP/P: *Sh* FAN: (substance)**

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## NON-CAPITAL PROJECT FUNDING (Obligation in \$000's)\*

Country: India

Project No. 386-11-190-367

Project Title: Agriculture Inputs Development: Oilseeds Subproject

Fiscal Years	A/P	L/C	Total	Personnel Serv.		Participants		Commodities		Other Costs				
				DI	PASA	CONT	Direct	Cont.	Dir.	PASA	Con.	Dir.	PASA	Con.
Prior Years														
Actual thru FY70	TC	G	2026	474	128	471	933	-	7	-	13	-	-	-
Oper. Yr. FY 1971	TC	G	736	114	50	150	413	-	-	1	1	7	-	-
Budget Yr. FY 1972	TC	G	783	106	31	297	345	-	-	1	3	-	-	-
Budget Yr. + 1 FY 1973	TC	G	472	99	45	184	141	-	-	1	2	-	-	-
Budget Yr. + 2 FY 1974	TC	G	137	-	-	115	22	-	-	-	-	-	-	-
Budget Yr. + 3 FY 1975	TC	G	79	-	-	57	22	-	-	-	-	-	-	-
All Subsequent Years	TC	G	-	-	-	-	-	-	-	-	-	-	-	-
Total Life	TC	G	4233	793	254	1274	1876	-	7	3	19	7	-	-

\*Aggregate for the Agriculture Inputs Development Project, including Oilseeds Subproject.

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Exchange Rate \$ 1 = Rs. 7.60

Project No. 386-11-190-367

Agriculture Inputs Development: Oilseeds Subproject

Fiscal Years	AID Controlled Local Currency		Other Cash	Other	Metric Tons	CCC Value	World
	US Owned	Country* Owned (\$Equiv.) in 000's	Contribution Cooperating Country	Donor Funds (\$ Equiv.)		Freight (\$000)	Market Price (\$000)
Prior Years Actual thru FY1970	-	1,075	-	-	-	-	-
Oper. Budget Yr. FY 1971	-	588	-	-	-	-	-
Budget Yr. FY 1972	-	573	-	-	-	-	-
Budget Yr. + 1 FY 1973	-	389	-	-	-	-	-
Budget Yr. + 2 FY 1974	-	105	-	-	-	-	-
Budget Yr. + 3 FY 1975	-	53	-	-	-	-	-
All Subsequent Years	-	-	-	-	-	-	-
Total life	-	2,783	-	-	-	-	-

\*GOI Trust Fund administered by USAID; Aggregate for the Agriculture Inputs Development Project, including Oilseeds Subproject.

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## NON-CAPITAL PROJECT FUNDING (Obligation in \$000's)

Country: India

Project No. 386-11-190-367

Project Title: Agriculture Inputs Development: Oilseeds subproject

Fiscal Years	APP	L/G	Total	Personnel Serv.			Participants			Commodities		Other Costs	
				DH	PASA	CONT	Direct Cont.	Dir. PASA Con.	Dir. PASA Con.	Dir. PASA Con.	Dir. PASA Con.		
Prior Years Actual thru FY70	TC	G	94	-	-	94	-	-	-	-	-	-	-
Oper. Ir. FY 1971	TC	G	-	-	-	-	-	-	-	-	-	-	-
Budget Ir. FY 1972	TC	G	193	-	-	172	21	-	-	-	-	-	-
Budget Ir. + 1 FY 1973	TC	G	136	-	-	115	21	-	-	-	-	-	-
Budget Ir. + 2 FY 1974	TC	G	137	-	-	115	22	-	-	-	-	-	-
Budget Ir. + 3 FY 1975	TC	G	79	-	-	57	22	-	-	-	-	-	-
All Subsequent Years	TC	G	-	-	-	-	-	-	-	-	-	-	-
Total Life	TC	G	639	-	-	553	86	-	-	-	-	-	-

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## Agriculture Inputs Development: Oilseeds Subproject

Fiscal Years	AID Controlled Local Currency		Other Cash	Other	Metric Tons	CCC Value	World
	US Owned	Country* Owned (\$Equiv.) in 000's	Contribution Cooperating Country	Donor Funds (\$ Equiv.)		Freight (\$000)	Market Price (\$000)
Prior Years Actual thru FY1970	-	90	-	-	-	-	-
<del>Budget</del> Yr. FY 1971	-	-	-	-	-	-	-
Budget Yr. FY 1972	-	158	-	-	-	-	-
Budget Yr. + 1 FY 1973	-	105	-	-	-	-	-
Budget Yr. + 2 FY 1974	-	105	-	-	-	-	-
Budget Yr. + 3 FY 1975	-	53	-	-	-	-	-
All Subsequent Years	-	-	-	-	-	-	-
Total life	-	511	-	-	-	-	-

\*GOI Trust Fund administered by USAID

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**Agriculture Inputs Development - PRCP Revision****INTRODUCTION**

Improvements in oilseeds processing technology are essential for improving total agricultural production and productivity. At present a considerable portion of the oilseeds crop is not utilized because of inadequate processing facilities, notably for cottonseed but also for a portion of all oilseed crops. Further, increasing the supply of protein foods and vegetable oils are vital elements of improving nutrition and reducing the drain on foreign exchange. This total problem of improving oilseeds production is being attacked from several fronts. The agricultural universities are expanding research on the oilseed crops, notably soybeans. Food products concerns are investigating a number of possibilities for new food products utilizing oilseeds protein sources. An essential element of all future planning is a well-established, efficient oilseed processing industry.

The National Cooperative Development Corporation (NCDC) has been assigned by GOI a major responsibility for improving oilseeds processing technology. The NCDC has been established by GOI for providing technical and financial support for the development of local cooperatives. Recent changes in staff of the NCDC have made this organization a dynamic, progressive group eager to maximize its contribution to agricultural development. The organization has had a good record in supporting the growth in cooperative sugar mills and input supply stores. NCDC now looks upon the field of oilseeds processing as an opportunity to diversify cooperative operations as well as meet the responsibilities assigned by GOI for agricultural growth.

A technical assistance effort supporting the NCDC is a complementary program supporting the oilseed crops research efforts of the agricultural universities and the human nutrition efforts of the Food and Nutrition Division. The support of the NCDC is the most accessible and extensive vehicle for reaching the processing link of the oilseeds processing cycle. This technical assistance program builds upon an earlier modest effort with the NCDC and has been programmed to reflect current priorities and attack current problems in developing this industry.

This project is designed to transfer the technology of modern oilseeds processing to an influential sector of the Indian oilseeds processing industry. The impact is expected to be more efficient and productive operations of the cooperative sector. It has been estimated that by the end of the project this sector will process 15% of the total oilseeds crop, perhaps 40% of the commercial trade of oilseeds products. The quality control and productivity

standards of the cooperative sector are expected to be followed by the entire industry, thus this project is expected to eventually contribute to improvements of the total industry.

## 1. Summary Description

### a. Necessity/Justification/Significance

The oilseeds crop accounts for approximately 11 percent of the total tillable cropped area, however recovery of oil and by-products is extremely poor. To meet local demand India reported an estimated 71,000 tons of vegetable oil products in January-October, 1970. The net foreign exchange needs for supplementary imports oilseeds and vegetable oils are approximately \$20 million annually.

Presently oilseeds processing is commonly done by small traditional presses for home consumption which results in very low recovery. The traditional pattern of cultivation of oilseeds crops is small plots for home consumption has not attracted any significant large-scale processing industry. In this situation the Government of India has assigned responsibilities for improving the processing of oilseeds to the cooperative sector - particularly the National Cooperative Development Corporation. The NCDC has developed a broadbased rural contact in sugar processing and it was anticipated that this same expertise could be applied to oilseeds processing.

The oilseeds processing organized in the cooperative sector in India as of March 1970 is reported as:

Groundnut decorticators	54
Coconut Oil Mills	31
Oil Mills	192
Solvent extraction plants and Rice Bran units	11
Vanaspati plants	2
Cattle/Poultry feed plants	5
Mechanical order	1

A description of several cooperative oil mills is contained in the End of Tour Report of Mr. H.D. Kissler, Oilseeds Processing Specialist.

The NCDC is now planning new installation of oilseeds processing as per the following schedule:

Rice Bran extraction units	15
Expeller oil mills	200
Solvent plants	25
Vanaspati units	10
Cattle/Poultry feed units	5

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With this additional capacity the cooperative sector of India is expected to have the capabilities of processing between 10 to 15 percent of the oilseeds crop by the end of the Fourth Plan. The target capacity of the cooperative sector would make this sector an important commercial processor of oilseeds crops handling an estimated 40% of commercial trade. Precise data is not available but it is assumed that with this processing capacity the cooperative sector could effectively improve product and market standards for the Indian oilseeds processing industry.

At this stage there is no alternative institutional structure through which to provide technical assistance in oilseeds processing. It would be extremely difficult to improve the present processing capacity which exists in small home presses as the Community Development structure is badly overworked in meeting its present responsibilities. The medium-scale private processing units have no organizational structure that could be utilized by the GOI in providing technical assistance to that part of the total industry in private management.

The NCDC has assisted cooperatives throughout the country with a variety of oilseeds processing operations. Groundnut is the major oilseed crop with annual production about twice the next four crops combined - sesamum, rape and mustard, linseed and castorseed. Other sources of vegetable oil are very poorly developed; such as cottonseed, rice bran and soybeans. Recent agronomic experiments with soybeans demonstrate a very promising potential assuming the establishment of processing facilities essential for realizing this potential. For all of these major crops the NCDC has identified cooperatives to pioneer the development of improved processing techniques, expand farm markets, and increase food and feed resources.

To date, the NCDC has programmed a major portion of its effort in the area of improving the performance of existing units. Further improvement in physical facilities, management techniques and administrative controls are needed and must be developed for cooperative organizations. Integration of all stages of oilseeds production, processing and product marketing are necessary to get maximum return and highest product quality. The cooperatives are now considering new organizational patterns for handling soybeans and new products to get maximum return for the cooperative investment in plant and equipment.

b. Project Targets

The primary target of this activity will be to improve the competence of NCDC technical personnel and improve the staff of the cooperative processing plants. Leadership in the NCDC is essential to

channel GOI resources most effectively. Management and technical skills are needed at the operating level to obtain maximum returns from plant and equipment.

The target is to be reached through 1) in-service training; 2) participant training; and 3) short-courses; seminars, and workshops. NCDC has acknowledged the responsibility to delegate counterparts within its own organization for undertaking this training. The cooperatives have indicated eagerness to designate officers and staff for all forms of training.

The technical fields of specialization to be developed through this sub-project are: 1) Oilseeds Processing Management; 2) Vegetable Oil Technology; and 3) Management Information and Accounting.

This project is expected to develop a staff of qualified personnel at the NCDC and at several cooperatives. New operational techniques, handbooks and training programs will be developed during the course of the project.

During this program, particularly in short course training sessions, there will be an opportunity to spread the input of the specialists beyond the cooperative sector. The mechanics of participation by the private sector, particularly small-scale, are to be developed. The dissemination of handbooks add to the spread effect of this project.

#### c. General Approach/Plan of Action

Three oil seeds processing specialists will be assigned to work with the National Cooperative Development Corporation under the jurisdiction of the Department of Cooperation, Ministry of Food and Agriculture. The specialists would be assigned according to the following schedule:

1) An Oilseeds Processing Industry specialist to be located at the Vaidunth Mehta National Institute of Management to develop management training programs.

ii) An expert in Oil Technology to be assigned to the National Cooperative Development Corporation for in-service training of NCDC staff.

iii) A specialist in Management Information and Accounting to be assigned to the National Cooperative Development Corporation for in-service training of NCDC staff.

Short-term consultants will be used to provide specialized attention to critical problem areas identified by the specialists and to broaden technical service in the areas of food production and marketing. It is proposed to use not more than two consultants for a total of 4 man-months during each year of the project. The specialized fields of consultancy will be defined by the technicians and the NCDC during the course of this project.

Participant training will be provided for five cooperative officers for a period of 3-4 months during each year of the project. These officers will be selected from the NCDC and state level cooperative organizations having major operational responsibilities in their respective subject matter areas. The participant training program should contain a major portion of exposure to U.S. processing operations.

## 2. Setting or Environment

India is one of the major oilseeds producing areas in the world. Of the tillable land in India, approximately 11 percent is planted in oilseeds crops. It is estimated that there are 16.5 million farms embracing 84 million people growing oilseed crops of all types. Forty percent of these, or about 6.4 million farmers, are currently members of village cooperatives. The great majority of these farmers are small land-holders and most of oilseed crops are dry farmed.

### Oilseeds Crops

Besides 5 major oilseeds (peanut, sesamum, rape and mustard, linseed, and castorseed) there are other oil producing crops like cottonseed, safflower, niger seed and more recently recognized are rice bran and soybeans.

The growth rate of oilseed crops is extremely low for the period 1949-50 to 1967-68; estimated to increase by 0.63 percent per annum. However, in the Fourth Plan the target is a production of 10.5 million tonnes against an assumed base level of 8.5 million tonnes. It is proposed to bring an additional area of 120,000 hectares into production of oilseeds crops through a second crop of groundnut during summer or rabi season in irrigated areas of a few states. An intensive package of improved practices will be promoted during the Fourth Plan for an area of 2.5 million hectares to obtain increased yield.

Groundnut is the most important oilseeds in India which comprises 25-30% of all groundnuts grown in the world and occupies about 40% of the total area under oilseeds in this country. The average yield obtained was 874 kg/ha in 1966-67 and 631 kg/ha in 1968-69 when

U.S.A. and Nigeria had 1700 kg/ha. Groundnut production will usually run about twice that of the other four major oilseeds combined.

At present about 1.8 to 2 million tons of cottonseed are available for processing per year. Of the total available about 30% of the cottonseed produced is processed. It is estimated that an additional 237,000 tons of vegetable oil could be produced from cottonseeds if properly utilized.

The product of coconut palms carries an oil content of about 64%. It is projected to increase production of coconut by about 20% in the next 3-4 years.

Although production of soybeans at this time is minor, the potential of the crop is very promising in India. The present area under improved varieties is about 5000 to 6000 hectares and is expected to increase to 120,000 hectares at the end of the Fourth Plan. It is estimated that the production potential of supply areas in U.P. and M.P. is capable of producing enough soybeans to supply a processing plant of 250 to 500 tons daily capacity.

Rice bran in its purest form obtained from modern rice mills contains 22% oil and the protein content in de-oiled rice bran is about 14%.

### Processing

The oilseeds processing facilities in India are a collection of many small traditional presses, a modest capacity in small screw-presses and a few modern oil processing mills. The present capacity is widely dispersed and not organized through any governmental service agency or trade association. The bulk of the oilseeds processing is undertaken for home or local consumption. For commercial trade the individual oil mill independently purchases the oilseeds and markets the products. A few large modern oil mills are collaborating with oil processing industries in planning production programs and schedules.

The cooperative sector has entered the oilseeds processing industry at the direction of the Government of India with the objective of organizing operations with improved technology and economy of operation. The plans for establishment of cooperative oil mills are described in section 1-a. Simply, the cooperative sector has established the capacity to process approximately 5% of the total crop within a five year period and intend to process 10-15% of the crop in five more years. This production capacity is to be achieved through modern mills and the increased returns are expected to be a significant benefit to the member farmers served by the new cooperative processing plants.

The new cooperative processing facilities will 1) increase total oilseeds processing capacity resulting in processing oilseeds crops such as cottonseed not now processed; 2) improve processing efficiency resulting in improved recovery of oil from groundnuts (peanuts) and other crops now processed; and 3) introduce new oilseeds processing practices which will produce new food quality products such as soybean full-fat flour. This project is intended to develop operational and management skills necessary to supplement the financial and organizational inputs of the GOY and the NCDC in achieving the production targets of the cooperative sector.

### 3. Strategy

Oilseeds processing is a new operation for cooperatives and consequently their present share of the business is very small. It is estimated that at present 5% is processed by cooperatives and the volume at the end of the Fourth Plan will be 10-15%. However, the cooperative sector has the financial and other resources to expand beyond this if the necessary technical manpower can be developed. The capacity of the cooperative sector to develop new technology is amply demonstrated in the fields of sugar processing and establishment of modern rice mills. Naturally the cooperatives have experienced many "growing pains" but they have demonstrated a reasonable capacity to capitalize on new technology and consequently have been assigned a lead role in oilseeds processing.

USAID assisted the NCDC by the assignment of an oilseeds processing specialist, Mr. Risler, from November 1966 to June 1970. As a technician, Mr. Risler did a commendable job in solving operational problems in oilseeds processing at many cooperative plants. His End-of-Tour-Report and Appendix provide a detailed review of the work undertaken and completed. It is noted that the various cooperatives were willing and able to implement Mr. Risler's recommendation and this assignment produced noticeable improvement in processing performance. Mr. Risler also noted many problems in the management and operation of oilseeds processing operations which were beyond his area of expertise. A team of consultants were invited to India in April, 1970 to review some of these problems and recommend an appropriate course of action. These recommendations are included with the Risler End-of-Tour Appendix. The NCDC received the recommendations with interest and after study indicated the intention of following through with the necessary action.

The recommendations in brief are:

- 1) Staff development plans are needed to develop an adequate level of background experience and improve management competence.
- 2) Management responsibilities must be clearly defined to ensure overall direction and adequate operational flexibility.
- 3) Accounting procedures must be developed to provide reliable and current information for management reference.
- 4) Management practices which increase volume are needed to reduce unit costs and improve profitability.
- 5) Marketing programs must be strengthened and coordinated with production schedules. Management needs to acquire and use market information as a working tool in production decisions.
- 6) Raw material inventory management must be improved to achieve high operating performance and profits.

Unfortunately throughout Mr. Risler's tour no technical counterpart was assigned to work with him. His official counterpart was the Managing Director, NCDC. Consequently Mr. Risler had no opportunity to train a technician in the vital technical service role which he performed. NCDC indicated a number of reasons for the inability to appoint the counterpart and provide the supporting facilities. This lack of support was the basis for USAID discontinuation of this project at the end of Mr. Risler's tour. This discontinuation was not a result of any change in priority or need but the result of lack of supporting performance by NCDC.

Since Mr. Risler's departure there has been a change in personnel at NCDC and this has produced a new attitude. NCDC has eagerly pursued the possibilities of further USAID assistance to NCDC and have acknowledged their responsibility to provide suitable technical counterparts and supporting facilities. The NCDC developed a plan of action essentially based upon the recommendations of the oilseeds consultancy team and gained the necessary administrative approvals to implement this program. This new attitude removed the reason for the discontinuation of assistance to NCDC and in fact increased the potential for effective assistance to oilseeds processing through this organization.

The consultants particularly noted that the cooperative sector oilseeds industry faced several specialized and independently complex problems. It was, and is, considered unlikely to find one man of adequate

versatility to deal with the particular problems of processing plant management, vegetable oil technology and business accounting, the priority needs of the industry. NCDC has concurred in this point of view and would like to have this full complement of expertise in a short period in order to achieve the ambitious targets in the operation of new plants as well as to achieve target performance in the production of existing plants.

In 1971 the GOI places an even higher priority on oilseeds processing than at the time the long-term strategy was developed in 1966. The possibility of improved processing performance has been demonstrated and there is now an impatience to achieve this performance from all units. The appreciation of better nutrition, etc. has also increased and with this appreciation there has grown an interest in the oilseeds crops and the potential they represent. The progress in developing the agronomic potential of soybeans has contributed most to the strengthened interest in improving and expanding the oilseeds processing potential of the country. The GOI has reminded NCDC of its major responsibility in this area and in this situation NCDC appreciates its need for outside assistance to accomplish this objective.

NCDC now recognizes that it must provide, in addition to finance, the example of a few well-run cooperatives, assistance in the development of manpower, and a pool of technical personnel who can analyze and solve the unusual problems that occasionally arise. In this context NCDC has requested the three specialists. While the specialists gain a familiarity with the Indian operations they would be expected to advise and direct modifications in certain pilot operations. During this examination, analysis, modification, and resumed operation they would establish model facilities for further in-service training as well as develop the NCDC technical competency of the counterpart personnel. The specialist would be expected to also conduct short courses and seminars in order to transmit their expertise further and obtain the maximum benefit throughout the cooperative sector and oilseeds processing industry generally. The improved staff competency of NCDC would then enable that organization to up-grade the remaining cooperative operations and ultimately achieve the production target assigned to the cooperative sector.

The participant training component would assist in the development of NCDC counterpart personnel and in development of the continuing in-service training capabilities of the cooperative training institute.

#### 4. Planned Outputs

The direct outputs of this project would be improved oilseeds processing and plant management procedures and training programs for extending operational and management skills to personnel of the cooperative sector. The specialists may introduce and adapt new operational techniques in a few cooperative oil mills on a trial basis before incorporation in handbooks and training manuals. In-service training at these pilot facilities is expected to be a key element of this program. Short courses and seminars will be developed to further expand coverage and introduce new practices and accomplish specific training objective. The training activities and material developed by the technicians and their counterparts in this project are expected to become the basic material for a continuing staff development program of the NCDC.

The specialists will directly contribute to the improved operation of a few oilseeds processing facilities as an incidental result of their efforts to prove the utility of new operational or management technique and during the course of building in-service training facilities. Such improvements in operational performance will provide a basis for estimating the total benefits possible from new practices when incorporated in the processing facilities under the direction of the trainees. Thus the specialists will indirectly contribute to improved efficiency and productivity of the oilseeds processing operation of the entire cooperative sector. This total impact will not be measurable within the lifetime of the project.

The specialists are also expected to indirectly contribute to improvements of oilseeds processing operations of the private sector. The private sector is expected to quickly adopt improved operational and management techniques developed during this project. Consideration is now being given to enrollment of private-sector personnel in the training program to maximize the spread effect of this technological input.

#### 5. Course of Action

Three specialists would be assigned to the Department of Cooperation, MFA according to the following schedule:

- a. An Expert in the Oilseeds Processing Industry with management experience and necessary academic background to be located in the Vaikunth Mehta National Institute of Cooperative

Management, Poona for taking up inservice training program in oilseeds processing industry at the Institute's level. This Expert will also make field visits to the concerned cooperatives and other institutions.

- b. An Expert Oil Technologist with necessary technical experience and knowledge of oilseeds processing industries to be located at the national level in the National Cooperative Development Corporation. This Expert will train his counterparts at the national level and advise the inservice personnel of the cooperatives and other concerned institutions.
- c. An Expert in Accountancy with necessary experience and background to be located at the national level in the National Cooperative Development Corporation whose service will be utilized in development and change in the accounting procedures in the cooperative industry to bring them in line with modern methods.

The specialists would be expected to accomplish the project objectives during 2- two-year tours.

During the first year the Specialists would be expected to identify critical problem areas, select advantageous demonstration and training sites, and begin counterpart training. As soon as appropriate, perhaps after six to twelve months, the specialists would advise and assist in the establishment of improved operational procedures at certain cooperative facilities. The specialists will be expected to be involved nearly full-time in operational improvements and in-service training of a few operational staff and their counterparts through the balance of the first tour.

During the second tour the specialists would give the major portion of time to conducting seminars, workshops and in-service training in their respective fields. The objective in this period will be to obtain maximum spread of the technology developed during the first tour.

Short term consultants, probably in the areas of food production and marketing, will be utilized to compliment the specialist services of this project. The specialists will consult with the NCDC on the basis of their experience in defining consultancy needs during the course of this project. Consultants would assist in developing management

recommends planning training programs and conducting seminars. The consultancy component is projected at 2 men for a total of 4 man-months during each year of the project.

The participant training programs would be phased over the entire period of technical assistance as per the following schedule:

	<u>FY1972</u>	<u>FY1973</u>	<u>FY1974</u>	<u>FY1975</u>
<u>Technicians</u>				
Oil Seeds Plant Management	1/12	1/12	1/12	1/12
Vegetable Oil Technologist	1/12	1/12	1/12	1/12
Production Accountant	1/12	1/12	1/12	1/12
<u>Participants</u>				
Oil Seeds Plant Management	2/8	2/8	1/4	-
Vegetable Oil Technologist	1/4	1/4	2/8	4/16
Production Accountant	2/8	2/8	2/8	1/4

The participant training program will be used to strengthen the training and counterpart capabilities as individuals are nominated, trained and return to their respective positions. The scheduling of participant training has been phased in relation to the projected development of programs in the three subject-matter fields. It is anticipated that field operations in processing management would benefit immediately from participant training. On the other hand, the requirement and needs in accounting and business management will take some time to define.

The total program will be supported with rupee funds for development of demonstrations, training aids and prototype guides and handbooks. NCDC and the cooperative institutions will carry the major responsibility for the in-service training program facilities and costs.

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