

PD-ABC-992

72541

SECOND INTERIM EVALUATION

SRI LANKA

DIVERSIFIED AGRICULTURAL RESEARCH PROJECT (DARP)

(No. 383 - 0058)

May 11, 1989

This report presents the independent findings and recommendations of an evaluation team. It does not necessarily represent the official views of the Government of Sri Lanka or the Agency for International Development.

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Contract No: PDC-0085-I-6095-00
Delivery Order No. 23

BASIC PROJECT IDENTIFICATION DATA

1. Country : Sri Lanka
2. Project Title : Diversified Agricultural Research
3. Project Number : 383-0058
Loan Number : 383-T-033
4. Project Dates : August, 1984 - August, 1992
 - a. First Project Agreement : 8/24/84
 - b. Final Obligation : FY88 (Planned)
 - c. Project Assistance Completion Date (PACD): 08/31/1992
5. Project Funding :
 - a. A.I.D. Bilateral Funding (Grant and/or Loan) : US\$ 11.4 Million
 - b. Other Major Donors : None
 - c. Host Country Counterpart Funds : US\$ 5.16 Million
Rupee equivalent
6. Mode of Implementation : AID direct contract with Development Alternatives, Inc. (DAI). AID Grant and Loan to Government of Sri Lanka (GSL) to be used along with GSL funds to finance participation of Department of Agriculture in the program.
7. Project Design : The Government of Sri Lanka, USAID/Colombo, International Agricultural Development Service (IADS), and International Science and Technology Institute (ISTI)
8. Responsible Mission Officials :
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9. Previous Evaluation : September/October, 1987
10. Cost of Present Evaluation: Contract with Devres, Inc.
(IQC) - US\$ 121,868

ACKNOWLEDGEMENTS

During the preparation of this report, the evaluation team received excellent co-operation, support and assistance from many individuals and organizations. It is our distinct pleasure to record our grateful thanks and genuine appreciation to the following :

- Dr. S.D.I.E. Gunawardena, Director of Agriculture and his staff at Peradeniya and Gunoruwa.
- Dr. G.W. Selleck, Chief of Party and Technical Assistance team of the DARP at Peradeniya.
- Dr. Charles Strickland and Mr. S.H. Charles, Co-Project Managers of the DARP, and other members of USAID/Sri Lanka at Colombo.

The many DOA officials at various regional research Centers, faculty members of the PGIA, University of Peradeniya as well as members of the World Bank, the Council for Agricultural Research Policy and executives of the Ministry of Agriculture, Food and Co-operatives, students and other individuals visited, with whom we had such pleasant and helpful interactions. They were most gracious and forthright and freely shared their insights with us.

Ms. Roshi Peiris, Office Manager of DARP, was of great help in finding documents and making arrangements. For this we are very grateful.

Finally, we express our special thanks to Ms. Tina Weltdt, who, under considerable pressure, did a superlative job in typing, revising and producing this report.

LIST OF ACRONYMS AND ABBREVIATIONS

A & E	Architects and Engineers
ADA	Assistant Director of Agriculture
AE	Agricultural Economists
AEARP	Agricultural Extension & Adaptive Research Project (World Bank)
AGLIN	ICRISAT Gene Bank Network
AIT	Asian Institute of Technology
AO	Agricultural Officer
ARF	Adaptive Research Farm
ARP	Agricultural Research Project
AVRDC	Asian Vegetable Research and Development Center
CARI	Central Agricultural Research Institute, DOA
CARP	Sri Lanka Council for Agricultural Research
CC	Co-ordinating Committee
CoC	Cost of Cultivation
COFC	Ceylon Oils and Fats Corporation
COP	Chief of Party
CTB	Cabinet-level Tender Board, GSL
CWE	Cooperative Wholesale Establishment
CYMMT	International Maize and Wheat Improvement Center
DA	Director of Agriculture, DOA
DAEP	Division of Agricultural Economics and Programs, DOA
DAI	Development Alternatives Incorporated
DARP	Diversified Agricultural Research Project
DD	Deputy Director
DOA	Department of Agriculture
DR	Division of Research, DOA
EA	Economic Assistant
ED	Extension Division
EIDD	Employment, Investment and Enterprise Development Q Division
ETD	Education & Training Division
FA	Faculty of Agriculture
FAO	Food and Agriculture Organization, United Nations
FAR	Fixed Amount Reimbursement
FARMAP	Farm Analysis Package, FAO
FIE	First Interim Evaluation
FMC	Farm Mechanization Center
FMRC	Farm Mechanics Research Center, DOA
FSR	Farm Systems Research
FSR/E	Farming Systems Research/Extension
GRE	Graduate Record Examination

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GSL	Government of Sri Lanka
GTZ	German Government's Agency for Technical Assistance
HC	Host Country
IARC(s)	International Agricultural Research Center(s)
IARI	Indian Agricultural Research Institute
IBPGR	International Board for Plant Genetic Resources
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRISAT	International Crops Research Institute of the Semi-arid Tropics
IFPRI	International Food Policy Institute
IIE	Institute of International Education
IIMI	International Irrigation Management Institute
IPM	Integrated Pest Management
IQC	Indefinite Quantity Contract
IR8	Rice Variety, IRRI
IRRI	International Rice Research Institute
IITA	International Institute for Tropical Agriculture
INTSOY	International Soybean Center, University of Illinois, USA
IPM	Integrated Pest Management
ISNAR	International Service for National Agricultural Research
KVSN	Village Level Extension Officer
L/COM	Letter of Commitment
LOP	Length of Project
LT	Long Term
LTTA	Long-Term Technical Assistance
MADR	Ministry of Agricultural Development and Research
MAFC	Ministry of Agriculture, Food and Co-operatives
MARD	Mahaweli Agricultural and Rural Development (Project)
MEA	Mahaweli Economic Authority
MT	Metric Ton
NAFNS	National Agriculture Food and Nutrition Strategy
NBPGR	Indian Board for Plant Genetic Resources
NiFTAL	Nitrogen Fixation by Tropical Agricultural Legumes
NSC	National Seed Council
OICD	Office of International Co-operative Development (USDA)
OSU	Oregon State University

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PACD	Project Assistance Completion Date
PCC	Project Coordination Committee
PGIA	Post Graduate Institute of Agriculture
PIO/C	Procurement Implementation Order / Commodities
PM	Person Months
PM	Project Manager
PMB	Paddy Marketing Board
PMC	Project Management Committee
PMU	Project Management Unit
PQ	Plant Quarantine
PSA	Procurement Services Agent
PSC	Personal Services Contractor, Provincial Seed Committee
PSC(s)	Provincial Seed Committee(s)
PP	Project Paper
RAE	Regional Agricultural Economist
RCMO/Bangkok	Regional Commodity Management Officer/Bangkok
RD	Research Division
RDC	Resources Development Consultants
RO	Research Officer
RRC	Regional Research Center
RTWG	Regional Technical Working Group
SCS	Seed Certification Service
SD	Seeds Division
SDU	Seed Development Unit
SFC	Subsidiary food crops
SF/PC	Seed Farms/Processing Centers
SFRC	Soy Food Research Center, DOA
SMO	Subject Matter Officer
SMS(S)	Subject Matter Specialist(s)
STTA	Short-Term Technical Assistance
SPA	Seed Producers' Association
ST	Short Term
TA	Technical Assistance
TOEFL	Test of English as a Foreign Language
T & V	Training and Visitation System (World Bank)
UP	University of Peradeniya
UPLB	University of the Philippines at Los Banos
US	United States of America
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHARF	World Hunger Alleviation through Response Farming

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EXECUTIVE SUMMARY

A. Background

This evaluation was initiated by USAID / Sri Lanka. The full evaluation report is titled Second Interim Evaluation, Sri Lanka Diversified Agricultural Research Project (DARP) (No. 383 - 0058) and is dated May 11, 1989.

This project began in August, 1985, and extends to August, 1992. The main focus of the project is the strengthening of the Government of Sri Lanka (GSL) institutional capacity to develop and transfer to small farmers the improved technologies and seeds required to sustain the production of subsidiary food crops (SFC), including coarse grains, oilseeds and pulses, to improve the income of small farmers and to improve the nutritional status of the population.

B. Evaluation Purposes and Procedure

1. Purpose

The purpose of this mid-term evaluation is to assess program to date and give recommendations for future directions. Important aspects of the project which were assessed include: modifications to improve the likelihood of achieving the project purpose; the delivery of AID and GSL project input; the progress toward achieving the Life of Project (LOP) Implementation Plan; the performance of the Technical Assistance Contractor; the validity of initial design assumptions and strategies; and the adequacy of the planned financial resources, time, and technical assistance to achieve the project purpose.

2. Procedure

The methodology employed in this evaluation included interviews with USAID executives, project managers, staff of the MAFC, DOA, and the University of Peradeniya, returned scholars, and representatives of donor organizations; visits to a number of facilities; and review of pertinent documents relating to this project.

C. Findings and Conclusions

1. This project is extremely complex, although it is based on a sound rationale and is well designed. However, it is also based on a set of assumptions which were not fully realized at the time of design, which could well result in less than the expected achievement. There was less than the expected level of: capability of GSL for timely financial and manpower support for research and extension; collaboration between the Extension, Education and Training, and Research Divisions; and capability of DOA to effectively organize and

program the shift to SFC. Political instability was a deterrent to project in several aspects. The scheduled timeframe is unrealistically short to accomplish project purpose.

2. Overall institutional capacity has increased especially in linkages and in research and seeds components; less so in extension and management aspects.

3. Long-term training is moving forward satisfactorily despite earlier serious problems in the split degree programming and management between DOA and the Post Graduate Institute for Agriculture (PGIA) of the University of Peradeniya. An innovative split degree proposed by Oregon State University (OSU) recently adopted by DOA should be helpful. Several scholars whose training in certain disciplines is essential will fail to obtain the necessary level of TOEFL scores.

4. Short-term training, workshops, seminars have been effectively utilized in topics strongly supportive of project objectives.

6. GSL Cabinet Tender Board procedures have slowed progress on both commodity procurement and construction elements of the project and reduced effectiveness of technical assistance.

7. Social and economic research studies are underway, and have had a significant impact, but no whole-farm studies have been conducted.

8. Agronomic and SFC research has been extensive, but little farming systems research has been conducted. New varieties have been developed but not released, and research results and manuals have been written but not published or packaged for extension.

9. Good progress has been achieved in the seed production, processing and distribution component of the project, and a momentum for commercialization has been established.

10. Revitalization of the RTWG greatly strengthened collaboration between research and extension, improved both research and extension programming.

11. The DOA LOP workplans have become the most effective instrument for project management, enhancing focus and prioritization of research and extension and seeds division activities on the SFC, by establishing annually stepwise targets and assessments of progress.

12. The technical assistance contractor, Development Alternatives Inc. (DAI) has effectively assisted the DOA in the DARP, provided qualified staff on a timely basis. The Institute of International Education (IIE) managed the training component satisfactorily. Much of the progress of DARP to date reflects on the innovative approaches and skills provided by the team.

D. Recommendations

1. Within Present Contract

DOA should continue to develop and implement annual workplans for SFC; maintain the presence of DAEP and DE in RRC; assign returned scholars to RRC; and upgrade English competency of candidates for long-term training. GSL and USAID should improve construction and procurement procedures. DOA should speed publication of research and extension materials; do multivariate analyses on baseline data; and conduct a follow-up monitoring study at the end of this phase. DOA and USAID should support research efforts in the Dry Zone in cooperation with MARD. USAID should continue technical assistance to the Seeds Division. USAID and DARP should use the remaining short-term TA for market analysis, dry land agronomy and media and publications.

2. Recommendation for Two Year Extension

Extension of DARP is critical. The original time was unrealistically short to accomplish project purpose. Institutional capacity of DOA has increased. Investments made are at threshold of yielding significant increases in capacity. The absorptive capacity of DOA for TA has increased so that further investment in a higher level of TA can be effectively utilized now for higher payoff. LTTA should be continued for SD, and for other TA in horticulture, marketing/policy economists and extension media specialist. STTA should include agronomist, water management specialist and training for ten scholars to M.Sc. level in extension and continued funding for project innovation should be provided.

3. Recommendations for Phase II

DARP is solidly based on mission strategy. Institutional capacity will have some degree of sustainability and investment will produce increasing returns. The results from expected level of commercialization of seed in SD will reinforce other components. A shift to commercialization of other inputs should be considered. A high priority effort on strengthening regional centers is timely and will greatly enhance the output of the DOA.

E. Lessons Learned

1. A shift in research emphasis requires considerable restructuring for a national system, and takes more time and resources than is generally supposed.

2. Projects with a mix of technical assistance and large facilities construction are likely to be hindered by delays; introducing unfamiliar procedures exacerbates these problems.

PURPOSE, SCOPE AND PROCEDURE OF THE EVALUATION

A. Purpose

The Diversified Agricultural Research Project (DARP) Project Paper (PP) and contract included provisions for several external reviews. This is the second interim evaluation. In March 1989, the United States Agency for International Development (USAID) contracted with DEVRES, Inc. of Bethesda Maryland to conduct this review at mid-term of the DARP project. DEVRES engaged a team of four consultants to execute the review during March/April 1989. The Scope of Work is included as Annex 2.

B. Scope

The Scope of Work for this review requires that an assessment of project implementation and progress to date be made to USAID/Sri Lanka. Further it requires the following assessments and appraisals:

- o Modifications to improve the likelihood of achieving the project purpose;
- o The delivery of AID and Government of Sri Lanka (GSL) project inputs;
- o The progress toward achieving the Life of Project (LOP) Implementation Plan;
- o The performance of the Technical Assistance Contractor;
- o The validity of initial design assumptions and strategies; and
- o The adequacy of the planned financial resources, time, and technical assistance to achieve the project purpose.

C. Procedure

The methodology employed in carrying out the evaluation included:

Interviews with:

- o USAID/Sri Lanka Executives and staff, particularly the DARP Project Managers;
- o The staff of the DAI Technical Assistance Contractor;
- o Senior Administrators and Technical staff of the DOA, Faculty of Agriculture University of Peradeniya, Post Graduate

Institute of Agriculture (PGIA), Ministry of Agriculture, Food and Cooperatives (MAFC);

- o Representatives of International Donor Organizations, private sector; and
- o A number of returned scholars in long-term training, and those in the split degree programs as well as those who have participated in short-term training.

Together with:

- o Visits to several Regional Research Centers, Seed Processing Production, and Distribution Centers, Regional Training Centers;
- o Review of all documents pertaining to this project and especially those relating to USAID program strategy and GSL development plans;
- o Analysis of program policy progress in relation to plans and targets established for DARP; and
- o Preparation of preliminary and final draft reports, responsive to issues raised in discussions with USAID, DOA and Technical Assistance (TA) Team, as a basis for the final report including findings, conclusions, recommendations and lessons learned.

I. BACKGROUND OF DARP

A. Country Situation in the Agricultural Sector

Agriculture continues to be the predominant sector in the economy of Sri Lanka. Its share of gross domestic product is approximately 30% and provides about 50% of the employment. Agricultural exports, as a percentage share of the national economy, have declined from 90% in 1971 to about one half in recent years. This decline, in part, is the result of an increase in value of industrial exports, but also a decline in the output of major tree crops. Several minor export crops, however, have maintained their shares in spite of increasing international competition, worldwide decline and volatility in prices of primary commodities.

The natural resources base for agriculture is represented by three major agro-ecological zones: the wet zone, the intermediate zone and the dry zone. However, varying in degree, in each major zone there are several micro-climates suitable for the production of many food, spice and beverage crops. A wide range of major soil groups is represented in each zone with varying capability to support specific modes of crop agriculture. Production occurs principally in two seasons: the Maha (October Northeast Monsoon) and the Yala (May Southwest Monsoon). Crops are planted, in both the Maha and Yala, according to their suitability for rainfed conditions, or under irrigation of varying degrees of adequacy.

Given this base, agriculture in Sri Lanka is highly diversified, much more so than in many other areas of the world of similar size. Rice is the staple food and in recent years its output has resulted in near self-sufficiency. Continued improvement in water management, varieties and cultural practices is expected to further increase yields and hence total national output, possibly producing surpluses over domestic consumption. Export of surpluses does not appear to be a viable option because of deficiencies in milling techniques, market infrastructure and suitable varietal adaptations.

However, the lag in yield increases of other food crops and the decline in the relative importance of traditional export crops as foreign exchange earners has caused concern among policy makers of the GSL.

Most of the food and agricultural production in Sri Lanka is by smallholders. Much of it is oriented towards family food security concerns. Nearly 40% of paddy holdings and more than 70% of other field crop holdings are less than 3 acres. Except for plantation and estate crops, marketing tends to be localized. Furthermore, except for areas predominant in plantation and estate crops, general market infrastructure is deficient and cannot support full exploitation of export markets for SFC crops.

B. Disquieting Factors Affecting Project Implementation

1. Cultural Disturbances

Cultural and ethnic disturbances, until settled, will continue to be a factor in the progress of the DARP. Problems associated with intense strife in several areas, especially in the North and East, have resulted in a reduction in the progress of construction and research activity by DOA Officers. Many scholars on split programs have experienced delays in their work and losses of data required for theses. Delays in movement of staff associated with the DOA and DARP have reduced potential effectiveness.

2. Concerns about Devolution

The intent to decentralize certain services of GSL to the nine Provinces understandably has caused some uncertainty among professionals in the DOA. Much of the unease relates to the concern of professionals being assigned to postw where available amenities are deficient, especially educational and health facilities. In addition, as the Poverty Alleviation (Janasaviya) program unfolds, some aspects of present structure and services will change, some of which may result in improved linkages to the rural population. Over time it may strengthen the effectiveness of agricultural research and extension in service to rural people, especially so if the critical link between research and extension is not weakened. Certainly, the output of agricultural research and extension is critical to achieve higher agricultural productivity and nutritional well-being and incomes. Indeed, higher productivity and income must undergird Janasaviya in the long run.

Nonetheless, uneasiness among professionals has existed for some months and will probably continue in the near future as the process of devolution unfolds, affecting not only the day-to-day operations of current programs but also the planning of future programs of the DOA and the DARP.

II. OVERVIEW OF DARP

A. Project Goal and Purpose

The goal of this project is to increase the income and employment opportunities of the 900,000 smallholder families in the dry and intermediate agro-ecological zones. Expected additional benefits are improved nutrition of both rural and urban populations from the expected increases in the production of SFC. This project supports the objectives of current overall GSL policies embodied in the National Agriculture Food and Nutrition Strategy (NAFNS) and specifically those embodied in the Crop Agriculture Development Strategy released in October 1984. Achievement of goals are expected to be measured in terms of increased output of the SFC and increased availability of these crops at affordable market prices.

The purpose of this project is to strengthen the institutional capability of the DOA in the necessary supporting elements to generate and effectively transfer the technologies and seed of the target SFC, so that sustainable increase in their production can be attained. The logical framework of the project is included as Annex 1.

The intended outputs specified for this project at its termination include:

- o Improved SFC varieties for which potentials exist for expansion either in domestic or export markets suitable for adoption by farmers;
- o Improved research and extension programming capable of establishing priorities, developing and extending suitable technologies for SFC to farmers in line with market potentials;
- o Improved capability for production, processing and marketing of SFC seeds including the establishment of a growing private sector role in production and marketing of registered and certified seeds;
- o Increased understanding by the DOA officers and staff of SFC Cropping Systems and of the necessity for full consideration of the economic and social factors involved in production and marketing; and
- o Improved management capability at all levels within the DOA, among its divisions and related units necessary for successful achievement of SFC.

The Project is a complex and comprehensive long term effort requiring a high level of integrative and collaborative interaction among the several divisions of the DOA. Successful implementation within the proposed time frame of 8 years is highly dependent on a high degree of timely sequencing of inputs and close collaboration between the GSL, USAID and the Contractor.

B. Assumptions

The design of this project is based on a set of assumptions listed in the PP that are critical for its success in terms of expected output. With the advantage of hindsight, the team believes that too much reliance may have been placed, at the time of design, on certain levels of institutional capabilities in the GSL or DOA assumed to have been attained under prior donor-assisted activity.

1. Although the design was in accord with the NAFNS, and SFC were accorded high priority in the implementation plan, the GSL has had difficulty in view of limited and declining public revenues (in real terms) to keep to the scheduled timing of priorities for required funding.

2. It was assumed that a substantial base and capability of extension would be in place at the initiation of this project. The World Bank-supported Agricultural Extension and Adaptive Research Project (AEARP) was nearing completion during the early stages of design of this project. AEARP established the Benor Training and Visit (T and V) System and fielded a large extension cadre and facilities for the associated training system and adaptive research units. The sustainable funding requirements for T and V are high. Several of the adaptive research units have lapsed and the intended level of effective collaboration between Extension and the Education and Training Divisions had not been achieved and has resulted in less than adequate support for the DARP, especially in the earlier years.

3. The assumptions relating to the planned level of attainment of the Seed Certification Service (SCS) Project (supported by the Netherlands Government) were essentially valid, except that the actions required for a National Seed Certification Act still remain to be completed.

4. The general assumption that USAID and GSL policies and priorities for agricultural diversification and priority SFC would remain essentially unchanged was in retrospect valid. Disappointing, however, is the inability of the GSL to make funds available for the expected level of manpower and resources.

The significant and continuing role of DARP in ascertaining the economic potential of expanded SFC and in the choice of priority crops suggests that the PP assumptions may be overly optimistic. Furthermore, recent studies undertaken by DARP suggest that the scope of expansion for various crops requires further analysis.

Especially important in several crops is an effectively maintained floor price to encourage more rapid farmer adoption of improved seeds and cultural practices. An operational floor price scheme is not in place. (See Annex 7, Section B) Further, the PP neglected to fully recognize that the required essential market structure for SFC crops is not well established in the intermediate and dry zones. In particular, grade standards, quality control, proper and timely assembly, storage of the outputs from potentially hundreds of producers are not in place -- all highly important and crucial needs if export markets are to be exploited. Most important, the PP underestimated the time frame required to establish these essential elements in export market penetration.

5. Despite the deficiencies noted above, the project is based on a sound rationale and is well designed. It addresses the critical need to increase the productivity and income of farmers in the intermediate and dry zones, which include some of the least developed areas of the nation, with good potential for development. It supports activities which are expected simultaneously to increase institutional capabilities at several levels, within and among the several key actors -- the training, research and extension institutions. Further, it intends to link and institutionalize the seed component in both its public and commercial aspects. Finally, it recognizes the critical necessity of institutionalizing the required management and administrative linkages.

This project, in retrospect, is extremely complex, targeting an area that has considerable potential for development of the previously neglected SFC through the intervention of crop technology. Obviously, the scheduled time frame is far too short to accomplish project objectives. In addition, the implementation of this project requires the highest order of skills from the DOA, USAID and the contractor in sequencing inputs, and in monitoring the process with sufficient flexibility to achieve the objectives.

C. Project Inputs and Outputs

The Project is financed through grant and loan funds from USAID in the amount of US\$ 11.4 Million and a GSL contribution in kind and cash of approximately US\$ 5.16 Million. The Project Assistance Completion Date (PACD) is August 31, 1992.

The total project provides substantial technical assistance, training, commodities, facilities, construction, operational and maintenance costs related to the SFC programs of the DOA. Further, social and economic research is supported, again according to the needs of the SFC program.

Specifically, USAID funds assist in funding the four principal components :

- o Strengthening the SFC research capability of the DOA;
- o Improving extension capability;
- o Improving seed production and distribution capabilities; and
- o Strengthening project specific and overall management capability of the DOA.

Outputs include those associated with training -- the building of the human resources of the DOA, affecting over the long term the policy formulation and management functions of the department as well as the quality and quantity of the research and extension effort. The benefits flow into the future well beyond the termination of the project.

Other anticipated outputs are specified in the logical framework, some of which are stated in measurable terms, others in qualitative terms. Inasmuch as the major outputs are stated in an institutional and capacity-building framework, evaluation of progress becomes qualitative and judgmental. Determinations centered solely on the achievements of contractual targets could greatly undervalue institutional capacity achievements. This project is now in its fourth year, and the difficulties in meeting contractual targets will make evaluation of the programs difficult. The delays in the construction of facilities and the procurement of commodities have had a negative impact on the institutional capacity-building possibilities of other inputs supplied to the project, particularly in training, in the quality of research outputs and in the quality of extension programs.

D. Relationships and Mechanism of DARP

This project is managed by the DOA. Overall responsibility is vested in a Project Co-ordinating Committee (PCC) chaired by the Secretary of the Ministry of Agriculture, Food, and Cooperatives (MAFC). Day-to-day management is accomplished by the Project Management Unit (PMU) in the DOA supported by a small staff. A Project Management Committee (PMC) oversees the activities of the PMU. The Chief of Party (COP) of the DARP TA Team occasionally serves as an ex-officio member of the PMC.

The complexity of this project requires the highest level of attention and management. The DOA has this responsibility. Especially important is the timely development of the LOP workplan which is presumed to bring together the efforts of the various divisions into an integrated effort centered on the SFC. Considerable delays were encountered in the early years of the project in preparing the annual and updated workplans. The first evaluation noted that the administrative viability of the project was questionable and that the attainment of project outputs was endangered.

The LOP workplan was last prepared for 1988 and is currently being revised for 1989. The major problems have been the timeliness in development of plans and the considerable slippage in follow-up. It appears that delays in preparation and implementation of this workplan reflect institutional weaknesses arising from fragmentation of the administrative and organizational structure of the MAFC. Admittedly, the LOP workplan is extremely detailed, requiring planning and action from selection of the priority of SFC crops, to details on the location and scope of research, to evaluation of research results, to actualizing recommendations to the seeds industry and to the extension services. Throughout the plan, collaboration at all levels is specified between the Research Division and the Regional Research Centers and Sub-stations, District Extension Centers, and Regional In-service Training Centers. As noted earlier, this project is highly complex, requiring the highest level of administrative and management capability. Yet, this is a critical need if the objectives of the project are to be attained in the time frame specified.

III. REVIEW OF THE SUPPORT ELEMENTS TO DARP

A. Training

Training inputs to this project include long-term academic training, short courses, organized workshops and seminars, all by joint concurrence with the DOA. Training is a highly prized input among the staff and administration of the DOA. It is likely to be the single most important input, as benefits will extend well beyond the end of the project. Sustainability of project objectives, particularly those dealing with strengthening institutional capability in timely and high quality research, extension and seed programs, depends greatly on a trained professional cadre.

1. Long-term Training

The original training plan provided for 61 advanced degrees (8 PhD, 53 Masters). Further, the plan specified that training be at U.S. universities, third country universities and a minimum of 25% at the University of Peradeniya through its Post Graduate Institute of Agriculture (PGIA). These specifications broadened the base of training opportunities while at the same time increasing the role of the PGIA in training Sri Lankan nationals, especially M.Sc. candidates. The University of Peradeniya (PGIA) had just completed an extensive upgrading of its staff and facilities under donor assistance, especially that provided by USAID.

The initial training plan was developed by the training sub-contractor, the Institute for International Education (IIE). In the process, IIE proposed several versions of possible combinations of split degree, third country, and US training with several options for implementation. All exceeded budgeted cost estimates.

Because of complexities of management and the desire to obtain maximum exposure to US and third country universities, the PMC adopted a plan whereby all students would undertake their course work at a US or third country university, return to Sri Lanka for research and theses and receive their degrees from the University of Peradeniya (PGIA). This procedure, known as the "split degree", was intended to increase the relevance of the students' thesis research through work on problems of agriculture in this country. It was also believed that this training with several options would reduce attrition rates, which on earlier projects had been high. The intent to utilize the split degree to the extent possible was a courageous decision by the DOA.

Indeed this was an innovative approach to accomplish several important objectives in strengthening the indigenous institutions in training capacity while at the same time obtaining in-country research and a trained staff that is more likely to orient their professional careers to the agricultural problems of the country.

Earlier expectations of its potential overall benefits have not been fully realized, particularly in the first years of the DARP. Details of the difficulties encountered in implementation during these years is given in the First Interim Evaluation of the Project (FIE), October 1987. Many of the problems incurred were related to co-ordination between the PGIA and DOA, and have now been generally resolved by the appointment of joint training co-ordinators, one each from the DOA and the PGIA. It appears that issues relating to stipends, reimbursement for expenses for field work and research, and transportation for the returned scholars on the split degree have been addressed.

A flexible mix of U.S. and Asian degree and PGIA split degree programs now has been adopted. An improvement in content and completion of the split degree (M.Sc) within 30 months was proposed by Oregon State University (OSU). This innovation was adopted by the DOA in February 1989. Similar arrangements with other institutions are being pursued. All scholars are expected to do thesis research in Sri Lanka. Of the 57 scholars budgeted, five have completed training, and 40 have commenced training.

The Team was able to visit with a number of scholars individually as well as representatives from the Agricultural Graduates Association of the DOA. The concerns expressed individually and by association representatives may be summarized as follows:

- o The "high [social] costs" to students and to the DOA of the split degree programs where the time required to complete the M.Sc. degree tends to be 3 years or more;
- o Unsatisfactory library facilities, lack of current journals and difficulties of gaining access to the two available libraries at PGIA and at CARI; and
- o Failure of advisors, some of whom are inexperienced, to meet scheduled classes and appointments and to provide prompt reviews of research proposals and theses.

In general, those interviewed felt that the PGIA degree is and would appear to be inferior among their colleagues, and result in impairing their opportunities for promotion in the system. Further, the local degree appeared to some to be discriminatory, depriving them of opportunities for consultancies and employment elsewhere, which some professors and officers enjoyed. However, compared to the findings of the earlier evaluation there appeared to be much more explicit recognition of the potential benefits to the nation of this program. (Annex 4, Students' Statement)

Two scholars to date have finished training but not returned. Approximately one-half of the 57 scholars budgeted, five have completed training, and 40 have commenced training including six women. Approximately one half of the budget allocation for training has been expended. (Annex 4, Tables 4-1 and 4-2)

Candidates for training will probably find it increasingly difficult to pass the TOEFL at the required level. They rightly are increasingly likely to come from remote stations and their English competencies will probably be deficient. Greater attention is needed to make TOEFL training available to all potential candidates. The selection process can become skewed and TOEFL-driven, favoring those from urban areas when other more important criteria for selection become submerged.

Unfortunately for the country, there appears to be less than the desired level of co-operation and linkage between the PGIA and DOA. Even though they are located adjacent to each other, a joint esprit de corps has not developed concerning their respective roles in the process of increasing the productivity of agriculture. While the members of the Faculty of Agriculture are probably younger and have less experience in research, they are an important cadre of agricultural professionals in the country in terms of the number of M.Sc. and Ph.D. degrees. This resource is under-utilized. (Annex 4, Tables 4-3 and 4-4) The percentage of females as given in these tables suggests that entry of women into these professions has been possible. Thirty percent of the professional staff of the DOA and 20 percent of PGIA are women.

Under the DARP, several linkages have been established by the DOA to bring the Faculty of Agriculture into closer relationships in the Regional Technical Working Groups (RTWGs) and in several coordinating committees. However, this is only the beginning. Much more use should be made of joint research projects funded on a regular and continuing basis. There are numerous other possibilities for coordinated activities which would benefit the agricultural sector.

2. Short-term Training

Short-term training has been utilized extensively to upgrade skills, and is creating awareness of alternative methods and approaches for possible use in the SFC. Originally, 553 short-term person months were budgeted, but this has since been reduced to 424 person months. As of this date (April 1989), 325 scholars have participated in the program. Of these, about 12 percent were women. It is noteworthy that approximately 75 percent of these scholars were sent to institutions in third countries, such as IRRI, AVRDC, IITA, AIT, Thailand, India, UPLB and Israel. The remaining 25 percent completed short-term training in various programs in the U.S.

Fields of training covered a wide range of topics and appear to be strongly supportive of project objectives. For example, 19 scholars studied various aspects of water management, 20 studied project design and implementation, and 37 studied various aspects of seed technology. Significant also is the number of officers in in-service training courses: 57 in use of computers and 34 in project design and analysis.

3. Workshops, Seminars and Reports

The DARP has effectively used workshops as a means to improve communications and share information and experiences. Six major workshops were organized by the DOA and DARP. Proceedings have been published which have become important data sources. Seminars by LT and ST technical assistance team members have been well attended. The project has produced a valuable data bank in its reports no where else available in the country. It appears that the relevant materials are shared with other projects and donor agencies. Seminars featuring returned scholars and those completing their work have been less well attended.

Unfortunately, several significant scheduled workshops, especially in management, have been repeatedly postponed, suggesting that there is a lack of full understanding of the role and use of workshops.

4. Conclusions

At this point in the project, the long-term training program is moving forward satisfactorily. Some serious problems with the split degree in the earlier years have been resolved. The schedule for utilizing the remaining available person months is reasonable. However, several scholars whose training in certain disciplines is essential will fail to obtain the necessary level of TOEFL scores, and this failure may prevent the LT training allocation from being fully utilized. The short-term training has been extremely useful in introducing new skills and an awareness of alternatives used elsewhere. The IIE sub-contractor has performed effectively through a difficult period in the evolution of the split degree program.

5. Recommendations

No major modifications in the program should be undertaken at this time as only 38 months remain before termination of project with respect to training. (August 1992) We have only one recommendation:

- o The DOA should organize immediately and make available to potential scholars training courses to improve their English competency.

B. Commodity Procurement

1. Background

The PP budgeted US\$ 2.26 million in loan funds for commodities. This budget was revised twice, first raising this amount to US\$ 2.5 million, and then lowering it again to 2.275 million (January, 1989). The First Interim Evaluation observed that only US\$ 444,000 had actually been spent as of September, 1987, and noted that virtually all of this was local procurement directly by DOA with reimbursement or direct pay by USAID.

The PP specified Host Country procurement with overseas procurement through a Procurement Services Agent (PSA). This procedure was unfamiliar to GSL, which continued to follow its own procedures in addition to those of the PSA, even to the point of submitting all PSA procurements, however small, to a Cabinet-level Tender Board (CTB). In retrospect, the PSA procedure seems to have been a bad idea. Instead of facilitating procurement, it has actually hindered and complicated it.

2. Findings

Regardless of the reason, procurement continues to be very slow. As of the end of December, 1988, only Rs 16.11 million (US\$ 644,000 @ Rs 25) had been spent, less than 30 percent of the budget allocation. Most of the findings of the First Interim Evaluation are still valid. Slow procurement, which was generally perceived to be no procurement has:

- o Delayed or complicated project activities;
- o Hindered the research of returned scholars and other officers;
- o Reduced the effectiveness of Technical Assistance;
- o Lowered the morale of returned scholars, other DOA officers and TA staff;
- o Caused the DOA Budget for commodity procurement to be consistently underspent, requiring requests for the revote of unspent funds for the following year; and
- o Delayed the debiting of the DOA budget after an order is placed, contributing to the apparent underspending of the budget.

In short, commodity procurement is grossly underspent, and equipment which is badly needed for many project activities is not available.

3. Recommendations

There needs to be a change in the procurement system. Since local procurement has proved to be much easier than procurement through the PSA, we suggest:

- o That commodities should be bought locally whenever possible;
- o That there be more DOA direct procurement; and
- o That MAFC delegate additional authority to the DOA for procurement.

C. Facilities Construction

1. Background

The building and construction program, to which \$1 million in loan funds is currently allocated (March, 1989), was designed to develop key Research and Seed Processing Centers to effectively serve specific agricultural regions. The PP proposed construction of facilities at seven RRC and five Seed Farms/Processing Centers (SF/PC), but due to civil disturbances two RRC and one SF/PC were dropped from the project, with resources intended for Karadiyan Aru transferred to Aralagenwila .

The PP specified the use of a local Architectural and Engineering (A&E) firm Resources Development Consultants RDC to facilitate construction processes. (RDC) performed very satisfactorily in preparation of designs, specifications, etc. However, weak capability of the civil Engineering Division of the DOA led to a long series of delays. As a result, the A&E contract was not signed until April 1986, and construction had not yet begun at the time of the FIE (September 1987). The FIE noted, however, that it might still be possible to complete construction on schedule by September 1989.

2. Findings

Implementation has been slower than expected by the FIE, largely due to late CTB approval and civil disturbances. There have been four construction contracts, whose status is shown below:

- o No. 1: Construction to be completed in April and May 1989;
- o No. 2: Construction on one site to be completed in May 1989. At two other sites not started because of civil disturbances;
- o No. 3: Contracts awarded as of March 1989; and
- o No. 4: Contracts awarded for three sites as of March 1989, pending for one site.

3. Conclusions

Construction is also behind schedule because of late GSL CTB approval, which resulted in awards to contractors after the expiry date of their bids, which in turn caused them to refuse to sign agreements without a provision for cost escalation. The GSL CTB has recently called for a complete retendering. This will cause significant further delays to the construction program.

4. Recommendations

- o The GSL Cabinet-level Tender Board should authorize DOA to act immediately upon approval of contract awards without waiting for a copy of the official minutes;
- o The GSL Cabinet-level Tender Board should consider giving increased authority to DOA to issue tenders for needed construction of buildings, and procurement of material and equipment;
- o The GSL mobilization advance should be available at the earliest possible moment to avoid escalation of materials costs, thus giving the contractors more incentive to commence construction; and
- o USAID and DOA should maintain close co-ordination between commodity procurement and construction, so equipment can be in place and fully operable when construction is completed.

D. Social and Economic Research

1. Background

The Division of Agricultural Economics and Projects (DAEP) is a young division of the Department of Agriculture, having been founded in 1983, but agricultural economists have worked within the Department for a number of years, notably in compilation of Cost of Cultivation (COC) data for Rice and the major SFC.

One of the aims of the DARP project has been to strengthen this new division. Social and economic research to be carried out under the project had three basic purposes: to help keep research and extension relevant to farmers; to provide data to monitor and evaluate the project; and to develop DAEP capability to undertake future research.

These purposes were to be met by several levels and types of studies: farm-level studies in farm management, production economics, socio-economic determinants of farming systems, farmers' perceived problems and production potential; and macro-level studies of production and marketing.

These studies would be both broad-scope standardized surveys to establish the baseline and monitor the effect of the project, and narrowly targeted, problem-specific studies.

By the end of the project, it was expected that

- o The farm level studies programme of DAEP would be established and continuing to monitor agricultural development variables on a long-term basis.
- o A number of analyses based on these studies would have been completed.
- o Increased multi-disciplinary work involving physical, biological and social sciences would be underway.

2. Findings

a. Shift of Regional DAEP Staff

As part of the emphasis on the regionalisation of research and on FSR/E and on-farm trials, approximately 8 Agricultural Economists (AE) were assigned to the RRC in 1982/83, with approximately 40 Economic Assistants(EA) to help them. As part of the devolution these AE and EA are to be transferred to the Provincial Councils, and most of them had already left the RRCs before our visits. The remaining 5 to 6 AE and 10 to 12 EA work at headquarters in Peradeniya. This reduction in staffing will affect the work of the DAEP, especially its work in support of SFC Research and FSR/E. However, it is expected that the technical and co-ordinating responsibility of the regional staff will remain with DAEP.

b. Multi-Disciplinary Work and FSR/E

Regional Economists have been participating in SFC research and extension to the extent of ascertaining costs and returns for already completed experiments and extension packages, particularly in Kilinochchi, Bandarawela, and in the GTZ Conservation Farming Project at Maha Illuppallama. This participation has been appreciated.

They have had limited participation in research design. They have been able to offer some insights into the interaction of different crops, livestock, and other enterprises on actual farms at RTWG meetings. These interactions might become a stimulus to true Farming Systems Research.

c. Broad-Scope Standardized Surveys

The only broad-scope standardized survey that has been conducted under the project is the baseline study, which was intended to establish a baseline in the target population, to which later monitoring of such variables as farm income, consumption, SFC technologies and contribution to farm income, participation of women in production and in the benefits of production could be compared.

Unfortunately, the baseline study was too narrow in scope to answer most of these questions. Each farmer was asked about only one crop or crop mixture, and no information was elicited about other crops, livestock or other enterprises on the farm, to say nothing of consumption. Sampling, while done carefully, was also done narrowly, the very large sample being in fact a collection of small samples, each of the farmers growing one crop in one district.

The sample was very large, more than 4000 farmers, requiring one visit per farmer per season, which meant that the measurement of crucial data, such as labour input, area planted, and production was poor. The large sample also caused the study to take much longer than anticipated, a problem that was exacerbated by lack of a comprehensive coding scheme, lack of a systematic computerized error-trapping scheme, and the shortage of computers, which led to the use of an inexperienced computer consulting firm.

Despite these drawbacks, however, the baseline study was completed, a detailed set of tables was produced, and a report written. The original data are stored on diskette and easily retrievable for further analyses, including comparisons of participation by men and women in the production of SFCs, and differences in productivity of farmers using different technologies. It should be noted the COC is very similar to the baseline study and has similar defects.

d. Targeted, Problem Specific Studies

Twenty-eight reports from such studies have been written, albeit two of these used data from the Seeds Division. (Annex 7, Section A).

Eleven of these could be described as farm-level studies, but all of these would also be described as production economics and marketing studies. Although they contain a wealth of information, particularly about marketing, the production data, is treated en masse, and no attempt is made to compare the net returns of farmers actually using different technologies. Instead, recourse is made to budgets based on experimental data, which do not give a good idea of the possibilities available to farmers. Perhaps there were no significant differences in technologies between farmers, but it is more likely that the studies used only published average data from the COC or baseline study.

Traditional type of farm management studies have not been conducted, which is disappointing but not surprising, since most of the production data came from the CG and the Baseline Study, neither of which collected whole-farm data.

The rest of the reports are either accounting reports (the two seeds studies) or macro-level studies of trends in production. Data from these studies have been useful, for example revealing weaknesses in the marketing systems for SFCs, and helping to establish research priorities. In addition, they have suggested topics for further socio-economic research: 6 proposals for socio-economic studies concerning Subsidiary Food Crops have been approved under the Small Grant Programme of the Social Science Review Committee.

e. Policy Analysis

A Marketing Policy Section has been formed at DAEP, which has found the problem-oriented studies very useful in its work. The Maize and Soybean studies, particularly, have been read by many people, discussed in Divisional meetings and in meetings with the MAFC. The Section is currently considering the whole issue of protectionism, and the relation of the floor price scheme and import restrictions (Annex 7, Section B)

A previously planned exploration of foreign markets for SFCs was postponed pending evaluation of the reports of the Sri Lanka Export Market Information Development Project (See Annex 7).

f. Research Priorities

Selection of crop priorities has rightly been consultative, supported by a formal analysis of domestic factors and a very different analysis of foreign and domestic market factors. The result of these consultations has been a gradual broadening of the focus of the project from 11 crops in 1986 to 21 crops in 1989 (with 10 other crops under consideration). This is a sensible and appropriate development, but it needs to be supported by a more comprehensive policy analysis. (Annex 7, Section C)

3. Conclusions

Social and economic studies are definitely underway. Much experience has been gained and much good work done. Within a short time of six years, DAEP has provided an improved and substantial data base not available elsewhere in country. Significant data were provided to the seeds division leading to improved seeds pricing and policies. The participation of DAEP staff in RTWG has brought economic considerations in these discussions important for research planning and extension program. Overall there is no doubt, DAEP has assisted greatly in the shift of the DOA on the SFC by providing a framework for analysis in determining research priorities among the crops.

It is also evident that it is called upon more frequently to deal with broader problems in marketing, policy analysis and socio-economic issues. It is clear also that its role in establishing a mode of FSR/E is critical in the years ahead. These responsibilities have begun to stretch the manpower resources of the Division.

4. Recommendations

- o DAEP should maintain a strong presence in the RRC. Without their presence at the RRC, the work begun so well cannot proceed efficiently.
- o Productivity analyses should be carried out on the baseline data. One of the most important sources of information about methods of reducing costs is the practice of efficient farmers. DOA should make the data diskettes available to students and professors at PGIA and other institutions who want to use them for these and other analyses.
- o Monitoring of the project should be done by a follow-up study in Maha 1991/92 and Yala 1992. The required effort should be reduced by the use of a much smaller sample, using efficient geographical segment sampling based on farms rather than on commodities. The changes in variables measured in the baseline study could be determined simply by using the same questionnaire again, but it would be preferable to use this opportunity to do a good whole-farm survey with multiple visits for a sub-sample to get good labour input and production data. The variables measured in the first study could be compared, and the whole-farm data could be used to produce analyses of actual farming systems used by farmers for the first time. This study could serve as a model for a future reformed COC.

If the project is extended, USAID/DARP should provide short-term TA to help in the design and analysis of this study, and funds for training in the use of FAO's Farm Analysis Package, which is specifically designed for use in farm-level studies in developing countries, and contains a comprehensive coding scheme and excellent error-trapping routines which could solve many of the problems encountered in the baseline study.

- o Whole farm research with farm record-keeping needs to be initiated in conjunction with the Farming Systems Research and Extension Programme and on-farm trials.

If the project is extended, USAID/DARP should provide long-term TA consisting of a farm management economist and a farming systems agronomist to help with this program.

- o Comprehensive on-going marketing policy analysis needs to be carried out, including studies of foreign markets, to assist in co-ordination of import and price support policies. DOA has already assigned people to this task.

If the project is extended, USAID/DARP should provide long-term TA consisting of a marketing economist to help in this work.

E. Agronomic and SFC Research

1. Background

A major, and a most essential, component of DARP is that of strengthening the Research Division in a shift from an over-riding focus on rice to a comprehensive research program on the SFC. A considerable emphasis was placed on selection of SFC suitable for the varied micro-climates within the Intermediate and Dry Zones.

Because of the different agro-climatic, ecological and water supply constraints, viable alternatives to rice production included the coarse grains (maize, finger millet, sorghum), grain legumes (cow-pea, greengram and black gram) and oil seeds such as sesame and groundnuts. DARP is aimed at expanding the technological base of SFC through selection of indigenous and other varieties resistant to local pests, diseases and other variables; and improvement of crop production systems based on better soil and water management, improved tillage practices, weed and pest control, intercropping and appropriate site-specific cropping systems suited to various agro-ecological zones. One of the aims of DARP was to improve the nutritional status of both the rural and urban populations through increased production of legumes. Protein intake in the national diet is well below universally established standards.

The infrastructure and trained manpower available to the Division of Research was limited before DARP was initiated. Research was focussed on rice and little SFC research, either of varieties or in cropping systems, existed.

The Division's research infrastructure in the Dry Zone was relatively new. Most facilities (7 regional research centers supported by agricultural research stations and adaptive research farms) were established in the 1970's. These research stations were staffed by a very small number of professionals with advanced degrees.

2. Findings

a) Plant Selection and Breeding

The plant selection and breeding research aims at selection of grain legumes, maize and sorghum, oilseeds and high-value crops such as chilli and onions.

Among its accomplishments are introduction of a large number of germplasm lines of legumes (cowpea, pigeonpea, chickpea, lentil), vegetables (tomato, okra, chilli, brinjal, garlic and capsicum), sorghum hybrids and several lines of maize.

Among new crops, pigeonpea, lentil and chickpea were introduced through the DARP/ICRISAT AGLIN program. Pigeonpea, a high-yielding grain legume with export potential, is seen as a good crop for the Dry Zone and for alley cropping in the Intermediate Zone. Research is underway for selecting heat-tolerant chickpea varieties for Kilinochchi, Bandarawela, Nuwara Eliya, Kalpitya and other dry areas in the Intermediate Zone.

DOA has accepted the recommendation to develop Meda as a third crop season with 50 to 60-day short duration crops such as cowpea and greengram under zero tillage utilizing residual moisture and fertilizer. Similarly, in years with erratic and scanty rainfall when paddy, chilli or onions will not grow, short-life legumes such as pigeonpea and mungbean may be good Maha crops.

New high-yielding disease-resistant varieties of greengram, cowpea, soybean and groundnut have been selected in the last three or four years and are awaiting release. (Annex 8)

b) Farming Systems Research

DOA has conducted cropping systems trials and a limited number of FSR trials, mainly at the Maha Illuppallama Regional Research Center for the last ten years. It is evident that there is considerable divergence in opinion among DOA researchers on the scope and content of FSR and FSR/E.

A workshop was held in September 1986 to review the current status of FSR/E in Sri Lanka, examine problems and develop a consensus for future action. The report was widely distributed and a committee was appointed to recommend the next course of action. The planned FSR identified for Maha Illuppallama and Girandukotte was not executed. However, the DOA has conducted a number of projects including the use of the inverted T-seeder at 10 locations; fertilizer use in cropping sequences; ten trials of P and K uptake on a number of SFC; and windbreak trials on chillies and several other SFC. It appears that limited use was made of on-farm trials or of placing these research activities in the context of the whole farm situation.

Part of the reason for slow progress is the lack of funding, but also the lack of understanding of the scope and content of the FSR/E approach. Furthermore, the DOA is essentially a crops research entity. For example, it did not have, in its Research Division, responsibility for research on animals. Obviously, their role in the farm unit as power and their requirements for feed and forage are important to farm families, and affect their options with respect to cropping alternatives. It is possible now with animal research coming under the wing of the MAFC to begin serious consideration of the role of whole farm research involving several disciplines in the real world of the farmer.

c. Weed Control

Although crop losses due to weeds are colossal, little research effort had been devoted to this problem. DARP fielded a weed control and Integrated Pest Management (IPM) specialist for two months in March and April 1987 to visit various RRC and assess losses caused by weeds. He identified and collected 145 weed specimens from fields under SFC and gave several seminars to heighten interest in biological and chemical weed control.

Later, a weed specialist from IRRI was invited on a ST consultancy to conduct a study in H System of the Mahaweli Project during the Maha Season of 1987-88. He found that of a total of 27 weed species in rice fields, not more than 5 species were the dominant weeds which were important in each soil type. He measured gains in rice yields with weed control. He is now in Sri Lanka on a second ST consultancy.

The last weed control manual, which included 50 weed species in the plantation crops tea, rubber and coconuts, appeared in 1951. It was not widely distributed, since a fire destroyed the entire stock in 1952, and it has been out of print since that time. There has never been a weed manual covering rice and other food crops in Sri Lanka. A 28-page Technical Guide in Weed Management has been prepared by DOA under DARP. It is ready for publication and awaiting clearance.

d. Dryland Agronomy

Even after the development of the Mahaweli Project, one million acres in the Dry Zone of Sri Lanka will not be irrigated. Agronomic practices for soil conservation and fertility, crop choice and suitable varieties, special problems of drylands call for development of a special set of technologies needed for rainfed agriculture.

e. Soil and Analytic Laboratory

There is a need for a well-equipped analytical lab within the DOA, capable of testing soils, water and plant tissue with the additional capacity of detecting pesticide residues on food crops. Such a facility is indispensable for research, student thesis work and environmental testing. A facility is available. Equipment for this laboratory is behind schedule because of delays in procurement.

As pesticide use increases in Sri Lanka, the need for education in the health hazards caused by improper use also increases. Moreover, inasmuch as pesticide residues on foods and horticultural crops are often fatal, the testing, setting of standards and education of field workers becomes increasingly important.

The Control of Pesticides Act, passed in 1980, authorized a Registrar of Pesticides, responsible to the Director of Agriculture. The Act identified the Government Analyst as the "authorized analyst" to perform pesticide residue analysis. However, this unit has not been able to provide such service. Consequently, the Agricultural Chemistry Group at CARI has been providing both formulation and residue analysis for the Registrar. Obviously, the analytical capability for pesticide analysis must be upgraded and expanded to provide support for regulation as well as for research.

3. Conclusions

Certain subsidiary food crops have been selected on the basis of their potential for enhanced production, economic benefit and export or other characteristics. Research has concentrated on varietal improvement with an active focus on cropping systems, soil and water management, and agronomic practices. The Extension Division has increased its efforts in the implementation of an active program to forge efficient linkages between research, extension and the farmer. Farming Systems Research and Extension programs, now limited, might become an effective approach to bring more relevant research to farmers when the livestock component and economics is fully harnessed to address the reality of the problems of farm families.

Use of seminars, workshops, review and evaluation of project-related activities, and field visits have been introduced by the DOA through DARP to encourage better coordination and integration of efforts on SFC. Use of computers has resulted in a more timely and thorough experimental output. Consequently, listing of available research recommendations for extension workers and publication of specific reports, bulletins and manuals for training and extension have been greatly facilitated. Technical inputs and editing was provided by DARP to DOA bulletins for use by extension and training staff.

However, the review process and publication of reports have been seriously delayed. A recent list shows that DOA publications approved for printing include five in Research, three in Land Use, one in Agricultural Economics and Projects, six in Education and Training, three in Seeds and thirteen in Extension. The team has also seen a number of other fully formatted and edited documents which have not yet been published.

Researchers generally complained about the lack of availability of current issues of technical journals and reports. In many instances, subscriptions have been allowed to lapse in the libraries available to them. Available technical works and books are limited.

The team noted considerable collaboration in sharing of expertise of TA and information between the DARP and MARD projects. DARP also co-operated in research, extension and seed activities in Systems B and C of the Mahaweli Economic Authority.

4. Recommendations

- o DOA should proceed with the publication and distribution of the Technical Guide in Weed Management;
- o DOA and USAID should continue to support efforts in the Dry Zone, especially in System B of the Mahaweli Project, in collaboration with MARD;
- o DOA through DARP should increase efforts to streamline the variety release process (Annex 8);
- o DOA should accelerate efforts to improve library resources, books and materials, particularly current journals, and access to these materials;
- o DOA should accelerate efforts to obtain publication of relevant research reports in time for discussion and planning of research and extension programs for use in the RTWG;
- o DOA and USAID should proceed with haste to have the planned soils laboratory finished as soon as possible;
- o DOA should strengthen coordination and the free flow of information between the various divisions as well as with PGIA and other bodies engaged in research; and
- o DOA should field a broad-gauged dryland agronomist to initiate work in agronomic studies relevant to the problems of the dryland areas.

F. Seed Production, Processing and Distribution

1. Background

Over the last several decades the Seeds Division (SD), along with the Seed Certification Services (SCS), had developed a strong capability to supply quality seed of improved varieties of rice. This capability of SD was a major factor in the growth of rice output to near self sufficiency in this country.

The SD is a government owned institution producing seeds on DOA farms or by private contract growers. Nearly all seed and planting materials are supplied through the SD. Distribution is principally through the extension service. About 10 percent moves through other retail outlets and direct to farmers. Since 1984 imported exotic vegetable seeds are handled by private importers and dealers. The production and distribution of improved rice seed is by far the largest activity of SD. At the time of initiation of DARP, 285 MT of SFC seed was handled through the SD - about five percent of the national requirement. It was recently reported that production of SF seeds is now around 350 MT and is in excess of current demand. The SD, like in many state-run enterprises over the world, was inefficient and costs regularly exceeded budgeted allocations by a considerable amount.

The PP indicated that the DOA was supportive of the following objectives for the SD :

- o Expansion of supply of improved SFC seeds to 10 percent of annual requirements;
- o Reduction in role of SD to maintenance of foundation and registered classes of seeds and corresponding expansion of commercial seed growers role in production and marketing of certified seeds;
- o Establishment of quality and monitoring capability at each seed processing unit;
- o Improvement of production, storage, processing facilities, farming practices on DOA seed farms; and
- o Creation of an environment for development of a commercial seed industry.

Prior to DARP, at least five donors were involved in supporting the development of SD with technical assistance, equipment and facilities. Several donors failed in the attempt to introduce a mixed private-government system for SD. However, this assistance did provide modernized operational facilities with sufficient capacity.

2. Findings

A very significant basis for the progress of the seeds program was the background provided through seven individual studies and information gained from several important workshops. Especially important was the Seed Workshop held in early 1987 and the Seed Feasibility Study completed later that year. The Seed Feasibility Study focused on restructuring of the industry and provided a step wise plan, including the development of pilot projects. It appears now that this approach was much more acceptable to the DOA than those earlier proposed by other donors. These together tended to build a degree of confidence in the DOA and reinforced the process of seed industry commercialization albeit now just beginning. Therefore a major restructuring of the seed industry is now underway, a process which will require careful nurturing.

Other field crop seeds, including those of SFC, are produced by contract growers, total of about 350 per year. Improved seeds from the current SFC research have been produced and distributed. Some SFC seed is produced in excess of current demand.

Foundation and registered SFC seed is produced on many of the supervised DOA seed farms. Certified seed is produced for further multiplication by farmers in vicinities of each of the DOA Seed Farms. It is planned that by July 1990, all seed of the certified class will be produced by private growers under the supervision of the SCS. Production and maintenance of breeder seed is a responsibility of the seed divisions. It is now hampered by lack of proper storage facilities to maintain quality, a serious deficiency and adversely affects the work of plant breeders. Lost breeder seed is difficult to replace and much time and effort have been wasted.

A program of action for Certified Seed Production assumed that the DOA would continue to produce breeder and foundation seed on state-owned seed farms. Registered seed production would be limited to those DOA farms that can produce seed at or below the price paid to private sector contract seed growers. Seed production cost studies have provided a better basis for realistic pricing to attract the commercial sector. The increased prices announced in 1988 removed earlier price disincentives to private sector market entry caused by subsidized pricing.

A Seed Development Unit (SDU) has been established within the DOA to stimulate commercialization of production and marketing of seeds. It will also advise the private sector on technical matters and co-ordinate donor assistance with respect to financial support of commercialization.

A Seedmen's Association has been established by private seed importers and producers with DARP assistance. The DOA has agreed to provide access and seed processing centers to the private sector to accommodate to their processing needs. The building and construction component for the SD, represented about one third of the DARP budgeted allocations for construction. Delays in construction and in commodity procurement have seriously affected progress of restructuring.

The SD is in many respects, in the frontline of enhancing SF crop productivity. Improved seed is essential, other technologies are additive. The prospect that the SD can become an efficient provider of seeds through the restructuring process is good. Thus it would become a lead component in more rapid increases in crop productivity.

3. Conclusions

The progress in SD component is already evident and has a momentum now that will result in substantial improvement in seeds production and distribution. The aspects relating to restructuring and commercialization have begun. Continuation of TA is needed to support full establishment of a viable commercial sector in seeds.

4. Recommendations

- o DOA and USAID should continue LTTA to the Seed Division so that continuity of restructuring process is assured;
- o DOA and USAID should provide STTA to assist the Seed Development Unit (SDU) in its programs of commercialization;
- o USAID should continue to provide funds to support special initiatives;
- o The DOA should establish certification fees for contract growers certified seed to defray costs of field inspection, sampling, testing and tagging; and
- o The DOA should increase the use of computerized inventory records of each seed lot by variety at processing plants, distribution centers and stores of certified seeds. This would result in better planning so that over-production would not occur, resulting in certified seed being sold as commercial seed.

G. Technical Assistance Inputs

1. Background

Technical Assistance to the DOA for DARP is being provided under USAID contract with Development Alternatives, Inc. (DAI)

The original plan for DARP was to provide 234 person months (PM) of technical assistance to the DOA. Of these, 138 PM were earmarked for long-term (LT) and 96 PM for short-term (ST) technical assistance. A total of \$4.741 Million was budgeted for this item and provided through DAI.

In March 1988 the DAI contract was extended from the original termination date of August 31, 1991 to run another year until August 31, 1992. The existing LT TA positions were extended by an increment of 54 PM including a 12 PM new position for a plant breeder. Similarly, additional funds were allocated for ST TA bringing the total technical assistance to a level of 250 PM of professional services.

2. Findings

An up-dated summary of all technical assistance provided by DARP is presented in Annex 10 (Table 9-2). It shows that of the total 250 person-months (PM) of TA, 171 PM was for LT and 79 PM for ST.

In the long-term positions the COP, the Seed Specialist and the Plant Breeder are providing assistance to the DOA. The Agronomist, the Agricultural Economist and the Soil and Water Management specialist have completed their tours, except the Soil and Water Management Specialist who is currently serving on a 2-month short-term extension. When the specialists have completed their present assignments, there will be no more budgetary resource left in the LT category.

At the end of February 1989, 35.50 PM of the budgeted 79 PM of ST TA had been provided, leaving a balance of 43.50 PM, 2.50 PM of which (budgeted for IIE) was not needed. (Annex 9, Table 9-1) To fill the remaining 41 PM of ST, DAI has already fielded a team of multi-disciplinary professionals. (Annex 9, Table 9-2). A few un-filled positions are expected to be filled in the next few months since most experts have already been either identified or are in an advanced negotiation phase.

3. Conclusions

Throughout this evaluation it became obvious that the contractor team had a significant influence on the results thus far achieved by the DARP. The LT team composed of professionals with considerable prior international experience was able on arrival to

establish working relationships with their DOA colleagues. The STTA professionals provided significant inputs in the several critical areas for attention in feasibility studies, workshops and through special reports. In most instances STTA professionals were able to engage the interest of counterparts in the DOA to undertake new approaches and initiatives to problems. Over 40 significant reports were produced by the TA team, most of them have become significant additions to the body of knowledge concerning the SFC in this country.

Especially significant in the development and refinement of DOA LOP workplan was the assistance provided to the DOA by the TA team. Further, the good progress in the seeds component reflects on the valuable contribution of TA in this area.

The mix of disciplines and the level of TA provided to the DARP has proven to be adequate for assisting the DOA in shifting attention to SFC.

It is now evident also that the level of TA effort was near the absorptive capacity of the DOA. Furthermore, it is clear that the time frame specified for DARP in the PP was grossly underestimated. The most important need is sufficient time for full gestation of the TA provided to achieve expected results. This obviously means an extension of DARP.

The contractor has fielded an impressive cadre of qualified professionals, whose contributions will have lasting benefits. The delivery of technical assistance has been timely and effective. The evaluation team is satisfied with the performance of the TA contractor. The Chief of Party has displayed a committed attention to the details needed for implementation and follow through.

4. Recommendations

- o USAID should consider the extension of the DAI team into the future phases of DARP. The considerable knowledge and experience obtained by the team will eliminate the start-up delays usually encountered by a new team and significantly accelerate future progress.

IV. FINDINGS FROM THE ASSESSMENT RELATING TO EXPECTED INSTITUTIONAL CAPACITY

A. Strengthening Subsidiary Food Crop Research Capability

1. Findings

The success of this project is fundamentally based on timely accomplishment of research results, interpreted and adapted for farmer use within a time frame of six years. It is the pillar upon which other subsequent activity rests. The PP was much too optimistic about what could be accomplished by indigenous institutions with limited human and financial resources.

The project called for a shift from essentially a one crop program to a concentrated and simultaneous effort on at least 15 crops with an area emphasis on the various micro-climates of the intermediate and dry zones. One need only recall that the development of IR8 rice at IRRI took nearly a decade of work. Selections were made from a world collection of germplasm by this international organization. It had adequate staff and financial resources. At the time of the release of IR8, its adaptability to other areas still remained to be done. Much of agricultural research is site specific.

Sri Lanka at this time is in an advantageous position in that it can draw on germplasm banks from the several IARCs and other international institutions. The DOA has acquired over 1500 accessions covering the wide range of SFC. Studies are underway in trials for the SFC dealing with varietal adaptability according to plant nutritional needs, insect and disease susceptibility, cultural practices, adaptation to soils and micro-climate -- a formidable task conducted under the constraints already noted.

In addition to these efforts are the socio-economic studies and market analysis studies so essential in the final determination of the viability of the crops within the domestic economy or as foreign exchange earners. These studies will continue to influence the selection of crops for expanded crop production.

Detailed review of reports of research of both agronomic and socio-economic studies suggests that a good information base has been produced, much of it internally validated, so that at least preliminary information can be shared with extension and the seeds component. Much more on-farm validation is required, a weakness which has been noted. Nonetheless, the flow of research information has begun for a number of crops and can be considered as "first approximations" of what can now be placed into the on-farm validation process with some confidence.

The weaknesses of the entire research system are readily observable. However, it must be emphasized the system was "slugged" with an overload. Adaptability research on 15 or more crops for the several micro-climates is a large task. The expectation that those finally selected would ultimately contribute to measurable increases in agricultural productivity within the life of the project is obviously highly improbable. The best-funded and staffed institutions anywhere would find this a most challenging task.

2. Conclusions

It is clear that a limited research capacity for SFC has been established. The shift in emphasis to SFC has begun and results are evident. Its sustainability will require a considerable level of targeted efforts.

B. Improved Extension

1. Findings

The level of extension capability was less than assumed in the PP. Its structure and a large personnel cadre was in place, but its operational viability is below the desired level. Budgetary constraints confine support mainly to personnel, with little support for operations or for undertaking new educational tasks. Up-grading of staff is a major need, but the scheduled long-term and short-term training of 20 staff is far short of needs. Some of the deficiencies could be overcome through accelerated in-service training, but the trainers themselves require considerable upgrading. Use of the proposed mass media approaches has not materialized.

An in-depth analysis probably would suggest that the sharing of training responsibilities between the Extension and the Education and Training Divisions has greatly reduced the efficiency of the extension program and the flow of information to farmers. A realignment of responsibilities would probably result in budgetary savings and an increase in the effectiveness of extension. It was not possible in this evaluation to observe extension capabilities in the field below the level of the Regional Training Centers. Review of materials indicates that the feed-back system from farmers to research is weak.

Notwithstanding the above constraints, the DOA, through DARP, has invigorated the RTWGs to better link research, extension and academic (PGIA) staff. Considerable progress can be noted.

Further, an assessment of Extension capability in terms of outputs must in turn require that there is something to extend. Obviously, effective extension of SFC depends on timely and available technologies from research that are suitable for farmer use. Unfortunately, these have not been available in a timely fashion. Although the flow of information has improved through the RTWGs, the very serious delay in the printing of extension materials has hampered the delivery of useful technologies.

If the transfer of the KVSN to the Provinces materializes, the essential linkages between research and extension will be seriously impaired.

2. Conclusions

Within the short time under consideration, the extension service has been responding in the delivery of available but limited technologies for SFC. Extension suffers from structural and organizational deficiencies. An intensive review of the extension organizations would be useful and especially timely now, in the context of the prospective changes that are indicated in the devolution program.

C. Improved Seed Production and Distribution

1. Findings

Together the Seed Division and the Seed Certification Service are service units of the DOA producing improved seeds for distribution mainly through the extension service to farmers. Seeds are heavily subsidized at this time. Both were assisted by donor organizations and had achieved a reasonable level of capability at the time of the initiation of this project.

A systematic effort by USAID and the DARP have been able to assist in restructuring the DOA seed industry. This complicated step-wise process has resulted in a beginning of the commercial production and distribution of seeds including the SFC. Both LT and ST training and the substantial allocation for construction will further add to the capability of the SD. Delays in construction and commodity procurement have hampered progress.

The effort to obtain more commercialization of seed could be delayed by lack of venture capital for market entry. Uncertainties with respect to future GSL seed pricing policies could also be deterrents.

2. Conclusions

There has been a significant improvement in seed production and distribution. The shift in restructuring the seed industry has begun and prospects appear to be very positive. Continued TA is needed to assure that this aspect of the project continues to make progress. In short, the seeds component of the project has moved forward in a more systematic manner than have the other components and become a lead factor in improving crop productivity in this country.

D. Improved Project/DOA Management Capability

1. Findings

The management requirements of this project are high, especially when measured in the context of its complexity and the intent to accomplish its several objectives within a span of a few years. Management is expected to result in high levels of co-ordination and integration among all the principal players, the Research, Extension and Seeds Divisions, as well as relating to the PGIA. Involved are timely decisions of the various levels in the GSL, sequencing activities among each player where later planned activities and results are dependent on earlier ones. Many of the decisions require financial resources difficult to bring to bear under the present circumstances. Achieving these levels of capability in a short time frame would tax the ability of the best public administrative and management systems. Further, it must be understood that many processes are beyond the control of the DOA and that its latitude and flexibility is circumscribed by GSL policy and procedures.

It would be quite easy to conclude that project management capability was or will be a significant deterrent in this project. The training of 43 scholars in various short-term programs in management, monitoring and evaluation no doubt will yield continuing benefits. However, efforts to bring TA to improve administrative management processes thus far have met with resistance in the DOA.

The fact that the DOA workplans for SFC have been developed, albeit with difficulty, represents a very positive effort in strengthening management capabilities. The DOA workplan does provide step-by-step program of actions needed in sequence for each player. Annual and frequent up-dating is now occurring. This process contributes to building management capacity. It is easy to underestimate the impact of the financial constraints and of the devolution process now underway.

2. Conclusions

The experiences shared by all involved have produced improvement in capabilities, gains which are fragile and likely not to be sustainable unless reinforced by continued TA efforts over a longer time frame. The DOA LOP workplan has been a significant instrument for management improvement.

E. Improved Institutional Linkages

1. Findings

This project has a high requirement for collaborative and integrative mode of operations for successful implementation. At the outset, the project faced a hierarchical structure between units and divisions with "high walls" and a management span of control far exceeding those found in most public or private organizations. The earlier difficulties associated with the development of timely DOA LOP Workplans are symptomatic of the low level of collaborative and integrative mode, top-down style and a protective attitude by individual divisions and units.

The DOA workplan for SFC is the key instrumentality to bring about a measure of flexibility and the possibility for innovative approaches. The DARP project thus has penetrated this system and has created an increasing awareness of the high necessity for improved linkages.

Institutional linkages between the DOA and PGIA, though improving, are relatively weak. The fact that each is responsible to different Ministries with different degrees of autonomy and funding procedures is the fundamental deterrent. However, under DARP the DOA has taken the lead in including Faculty of Agriculture staff on commodity and training co-ordinating committees and in the work of the RTWGs. Their involvement, however, is dependent on scarce operational funds, especially for transport.

Another significant input in improving linkages is training, and especially short-term training involving over 300 scholars whose specific skills have been increased, for example, in microcomputers, research project design and techniques and in many other fields. These training experiences, nowdoubt, have contributed to improved local institutional linkages, the benefits of which will extend well beyond the life of the project.

These training experiences, both long-term and short-term, many at the IARCs but also at Asian and third countries have contributed to building international institutional linkages, most of which will survive.

Disconcerting is the fact that many publications obtainable for free or at nominal costs from the IARCs, third country institutions and universities are not requested, presumably because of lack of postage. The libraries appear to be especially negligent in following through in this linkage-building activity.

2. Conclusions

Substantial linkages have been built despite various organizational and structural constraints. Further, enhancement of linkages will depend in part on the devolution process as it proceeds. Probably the most enduring linkages are those with international institutions, which can be accelerated at modest costs.

V. CURRENT STATUS OF DARP BUDGET AND GSL COUNTERPART FUNDING

The total USAID planned funding for the DARP is US\$ 11.4 million composed of a loan of 3.5 million and a grant of US\$ 7.9 million. Accrued expenditures as of March 31 1989, were US\$ 4.584, US\$ 697 thousand of the loan, and US\$ 4,584 million of the grant. Approximately 80 percent of funds under the loan have not been spent. (Annex 11) Over one half of the loan funds were budgeted for commodities and were to be expended during early years of the project.

The planned GSL LOP contributions was Rs. 139.32 million. Annex 11. As of December 31 1988, total expenditures amounted to Rs. 25.315 million or approximately 18 percent of that allocated. Roughly one half of time of project remains indicating that expenditure rates, is well below that expected at this time. Approximately one half of LOP budget plan is in the personnel category which includes incremental and apportionment of current staff. Expenditures to December 31 1988, in this category represented only 14 percent of the total.

Forty percent of total planned LOP budget was to operations and maintenance of new facilities but thus far only 8 percent has been expended, reflecting the delays in the construction component.

Overall expenditure rates are well below the levels expected at this time in the LOP. It appears that much of the delay is associated with delays in construction and commodity procurement. The status of commodity procurement at time of FIE and situation of procurement as of this date clearly suggests that AID procedures and GSL procedures have conflicted in several important aspects. As noted earlier some progress in resolving problems has been made in recent months.

DOA obviously has weaknesses in programming and budgeting. Part of difficulty is that allocations to the DOA in general come in block votes and often are not tied to program areas. Improvement in management at this level of administration may not be easily achieved as the DOA is proscribed by general GSL procedures. Management of resources allocated specifically to DARP suffers from these same deficiencies. A considerable effort by DARP on management improvements at lower levels, especially in project specific categories in research and extension has produced some results.

A very significant need is the preparation of a policy paper, which would specify the DAEP role in policy analysis of the programs of the DOA. This has not been accomplished. There is a critical need for a policy framework for activities within the DOA. This is important. Further, the relationships and policy roles among and between other entities within the MAFC is critically needed.

VI. GENERAL CONCLUSIONS

A substantial amount of research on the SFC has been undertaken. Within a few years, the research on SFC has become quite broadly based. Selection of varieties of SFC for adaptation to the various micro-climates and soils, and other aspects such as disease and pest resistance and control, tillage and cultural practices have been undertaken. An effort has begun on related aspects dealing with water management and agro-climatic studies. The socio-economic studies have provided for the first time a data base related to SFC cropping systems, production costs and marketing. These data can now begin to strengthen efforts to orient agronomic and other research more intimately to the farmers' situation. Good progress has been made in restructuring the seeds component and commercialization has begun through pilot activities.

The DARP has introduced, through short-term training, a long list of essential skills, techniques, and methodologies to the Research, Extension and Seeds Divisions. It has greatly improved linkages, to extension and especially to international organizations. Improvements in management aspects require further effort.

The DARP has been successfully launched. The scope and quality of the activities that have been undertaken to support and strengthen the DOA is impressive. The capability of the principal actors in the DOA has improved considerably, despite the weak general economic situation. A momentum has been established which can lift the capability of the institutions from a stationary state on a pathway of sustainable productive outputs. An extension of DARP for two years is needed to sustain this momentum.

Furthermore, the team believes that sufficient evidence has been gleaned from this evaluation to strongly support a Phase II of the DARP. The focus should remain on the SFC to obtain further gains in diversification and productivity of the agricultural base. Particular attention to the needs of small holder farmers is a high priority. As

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agricultural production will occur. Further effort is needed to probe more fully potential export markets and to extend strengthening of the commercialization of the agricultural support industry. The commercialization process has begun, but substantial acceleration is needed in order to successfully attain the level of efficiency required for competitive market penetration. Improvements in production and in the capacity for assembly, processing, wholesaling and marketing of quality products is needed to be successful in the "rough and tumble" world of international markets. Obviously efforts leading to reduction of costs of production and of marketing becomes crucial.

Considerable TA, and Training will be needed which can be more appropriately specified near the end of present contract.

VII. GENERAL RECOMMENDATIONS

A. Nature of Recommendations

This evaluation is being conducted well into the fourth year of this project. Thirty-eight months remain to the end of the project in August, 1992. However, only twenty-six months remain in the Technical Assistance and Training contract (expires August, 1991), and all long-term technical assistance will be completed within nine months (March, 1990).

B. Recommendations within the present contract

- o DOA should aggressively pursue timely development of and implementation of the DOA Work Plans for SFC so important in producing an integrative policy and operational guidelines;
- o DOA should vigorously explore ways in which the presence of the Agricultural Economics and Extension Divisions can be maintained in the RRC and among the farmers;
- o The DOA should encourage, to the extent possible, the assignment of returned scholars to the RRC, where the talent base is especially weak, for follow-on of presently established SFC programs;
- o DOA should immediately provide for upgrading of English competency. Failure to do so will result in loss of training opportunities for many otherwise qualified candidates;
- o GSL and USAID should accelerate efforts to resolve the remaining problems and issues concerning construction and especially commodity procurement;
- o DOA and USAID should proceed with haste to install equipment in the planned soil and analytical laboratory;
- o DOA with DARP assistance should accelerate the publication of research results, training materials for extension, other manuals, and useful reports of seminars and workshops, which can become part of an urgently needed current information and data base;
- o DOA with DARP assistance should carry out productivity and other multivariate analyses on the baseline data, and make these data freely available to others for such analyses;
- o DOA with DARP assistance should conduct a follow-up to the baseline study for monitoring progress at the end of the present phase of the project;

- o DOA and USAID should continue to support efforts in the Dry Zone, especially in System B of the Mahaweli Project, in collaboration with MARD;
- o USAID should find resources to continue technical assistance to the Seeds Division so that the initial gains in commercialization of seeds are not lost. At present, they are not sustainable and reactivation later would require considerable investment; and
- o USAID through DARP should utilize any remaining available short-term technical assistance beyond those now tentatively scheduled to support other initiatives, such as market analysis, dryland agronomy and additional media and publications efforts.

C. Recommendations for Two Year Extension of DARP

1. Background

The team believes that extension of DARP is critical. The original time frame was unrealistically too short to accomplish project purposes. Sufficient evidence has been found that investments made in the DARP thus far are on the threshold of yielding significant increases in income through productivity and thus also improvement in nutritional status. Commercialization of the seed segment has begun and the policy intent to rely more on market forces is encouraging. A momentum has been established. It needs to be seized upon, so gains thus far achieved will move forward.

Important is that the large cadre of scholars now in training will be back in position. The technical assistance team will be able to support them, and bring them into the mainstream of SFC research program more quickly. Too often returned participants have "reentry" problems. What they need is assurance and technical assistance so that their training can quickly have a pay off on high priority programs. The return of trained personnel, if quickly harnessed can give a tremendous uplift in productivity of programs based on the foundations already built by the DARP. The absorptive capacity for TA in the DOA will have increased at end of current project. Therefore it would be prudent to increase the level of TA in a two year extension to accelerate progress from the institutional base that will have been established.

2. Technical Assistance for Two Year Extension

A number of recommendations indicated above in Section B are expected to have been acted upon and completed. Others will apply and continue in this extension of DARP. The team suggests the following kinds and levels of technical assistance for the two year extension.

a. Long-term Technical Assistance

- (i) Chief-of-Party : 24 PM
- (ii) Seed Specialist : 12 PM
- (iii) Horticulturist : 12 PM
- (iv) Economist : 24 PM
(Marketing Policy, Crop Production
Efficiency)
- (v) Media Specialist : 12 PM
(Extension)

b. Short-term Technical Assistance

- (i) Agronomist : 12 PM
(Periodically)
- (ii) Water Management : 12 PM
(Periodically)
- (iii) Management : 6 PM
- (iv) Others as Needed : 4 PM

c. Training

- (i) Short-term : 25 PM
(as needed)

d. Commodities
(if any)

e. Construction
(if needed)

f. Funds for special project initiatives and discretionary purposes for seed program development should be provided.

D. Recommendations for Phase II of DARP

1. Background

It is expected that USAID Sri Lanka mission strategy for agriculture will continue to emphasize rural income enhancement through productivity increases and commercialization of key input supply components. The main target population include the nearly one million small holders in the dry and intermediate zones.

The Phase II of DARP should continue to be based solidly on this strategy. It should emphasize decentralization of the research and extension capabilities. The regional centers should be strengthened considerably in order to "shorten" the "linkage chain" between research, extension and farmers. The talent mix at the regional centers should be changed, and some further specializations occur among the centers to accommodate the different agro-climates. Plans for the special needs of the North and East stations should be made for activation when civil strife has ended.

The level of total professional agricultural manpower in the DOA is adequate for this country's needs at this time. On the other hand there are serious weaknesses in the level of training and gaps in essential disciplines needed. Given GSL constraints on total manpower increases a considerable shift of talent from the center to the regions will be required.

2. Needed Data Base for Planning Phase II

Probably the most urgent need is to begin establishing a preliminary data base in support of program planning formulation and budgeting in the context of prospective decentralization. The need for programming, planning and budgeting has become evident, especially in marshalling financial and manpower resources. The difficulties encountered in developing the DOA Workplan with respect to SFC stem from this need.

It is understood that the shift to program budgeting by the individual divisions and departments would be favorably considered by the MAFC, especially in those programs dealing with research. Further, if the emphasis on strengthening regional centers occurs the need for specifying program areas for development and budgeting becomes obvious. Changes must be based in part on a rather well-planned analysis of the current situation, anticipated needs, and expected objectives for each program area. It is highly possible that this study effort could be coordinated with the current efforts of the Sri Lanka Council for Agricultural Research Policy (CARP), along with linkages with the World Bank and GTZ in support of the CARP program. It would support the CARP effort in several ways. The detail of such a study can be further developed collaboratively.

Suggested elements of such a study would include:

- o Classification and identification of gaps in the research programs and the professional and technical manpower by discipline, needed with particular reference to the Regional Research and Extension Centers;
- o Analysis of the required changes in personnel policies, procedures, and measures of performance, to insure improved efficiency of DOA in a more decentralized structure;
- o Analysis of the potential for linking PGIA more closely to DOA research activity through research grants, collaborative research programs and possibilities for inter-agency joint staff appointments; and
- o Analysis of the special needs and the kinds of new linkages required as a result of devolution that would not impair the imperative necessity, not only of maintaining but of strengthening the process of technology diffusion to farmers through research and extension.

At first glance, the suggestions above may seem to indicate a rather large and complex effort. The review, however, should be the joint effort of a small team representing MAFC and CARP, along with several professionals provided through TA or PSC possibly from USDA (OICD), and should be coordinated with CARP, which is charged with developing the National Agricultural Plan. This team should be able within a few weeks to prepare the outline of the essential elements of Phase II of DARP. The intent of these suggestions is to begin simple analyses of the key components to obtain "first approximations" of discrete program areas. These data would provide an improved base on which to formulate the kind and extent of needed project inputs in Phase II.

3. Other Considerations for Phase II

A priority area for consideration in Phase II is the strengthening of extension cadre at the regional centers. This will likely involve the restructuring of extension services. Particularly important is the need for highly qualified subject matter specialists whose task would be to synthesize and integrate research findings from the various disciplines into viable sets of recommendations for farmer use. These professionals should be well grounded in a basic agricultural field and in addition, have skills in extension methodology. One or more of this kind professional at the regional center could serve in a highly useful catalytic role. They would interact daily with research and extension counterparts. They should

be trained at the M.Sc levels. These professionals would serve a different role than do the present subject matter officers. What is proposed is a professional who has intimate knowledge of available research as well as the needs of farmers. This person would be able to synthesize information for delivery to farmers or suggest further research.

At the present time the catalytic synthesizing process is an extended one, involving education and training, extension, research division, PGIA mostly through the RTWG. The RTWG is useful and critical procedure at this stage. Sometime in the future the process needs to be rationalized to conserve both time and manpower resources.

It is probably premature to specify the detail of TA, training, commodity, and facilities needs. The following are suggested for consideration. It appears that useful TA would include continued assistance in agronomy, water management, horticulture and in extension. Depending on status of seed restructuring program some thought might be given to broaden TA in this category to assist commercialization of other facets of the rural input sector, i.e. fertilizers, local manufacture of improved farm tools, etc. The emphasis in LT training should shift somewhat toward Phd levels for research division, horticulture and possibly in livestock research.. A general upgrading at M.Sc level in all divisions, but especially for extension is needed.

Commodity needs cannot be specified at this time. It would be very appropriate to begin an analysis of the adequacy of the amenities, housing, etc. at the regional centers in order to program construction of these facilities early on in Phase II.

The plans for Phase II of DARP should take into account the current and planned program of the donors and where feasible provide collaborative linkages with them.

VIII. LESSONS LEARNED

Several lessons have been learned that may be helpful to others involved in design and implementation of similar projects. This project was undertaken to broaden the base of a national agricultural and food research institution, which had a narrow focus, principally on rice, to include a set of other food crops having a high national priority. It required integrating these efforts with the national seeds organization for production and distribution when approved varieties became available from research. Further, the efforts of research and of the seeds component were to be integrated with extension for timely outreach to farmers.

In addition, the project was to encourage commercialization of seed production and distribution, which in itself would involve a complex set of factorw. The project therefore required major and comprehensive changes in modes of operation, and in the degree of integration of the research, extension and seed components, and was far more extensive than would have been expected from a mere change in emphasis in research. It is now clear that the required changes in structural integration in policy and modes of operation had a greater impact on the entire system than had been anticipated.

A. Lesson One

A shift in research emphasis involving even a relatively few crops requires a considerable restructuring and integration for a national system (research, extension and seed production) to accommodate in a short time span. Its success is dependent on a set of interrelated social, cultural, fiscal, policy, and administrative adjustments. The time and resources required are often underestimated.

In the case of DARP, the construction procedures were designed to facilitate timely construction. However, weaknesses in GSL procedures cause considerable delays. This led to a series of difficulties, frustration, a threat to morale and a possible waste of resources. The fact that TA leading to institutional capacity building aspects is well ahead of the construction program is a risk to the achievement of the full anticipated benefits of TA.

B. Lesson Two

Projects with a mix of TA and large facilities construction are likely to be inhibited by delays in the construction component. Experience indicates that host countries often have endemic problems in facilitating construction.

ANNEX 1

Logical Framework: Diversified Agricultural Research

ANNEX 1

Logical Framework: Diversified Agricultural Research

Project Design Summary

LOGICAL FRAMEWORK

Life of Project
 From FY 84 through FY 92
 Total U.S Funding \$ 11,400,000
 Data Prepared May 7, 1984

Project Title & Number : Diversified Agriculture Research, 383-0065

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: Increased small farmer and employment in the dry and intermediate zones, and improved nutrition.</p>	<p>Measures of Goal Achievement :</p> <ol style="list-style-type: none"> 1. Gross and per acre production of SFC increasing; 2. Returns to labor in SFC production increasing. 3. Incomes of dry and intermediate zone farmers increasing; and 4. Increased availability of target crops at affordable prices, for all income groups. 	<ol style="list-style-type: none"> 1. Department of Agriculture (DOA) survey findings 2. Census and Statistics data; and 3. Agro-socio-economic studies. 	<p>Assumptions for achieving goal; targets:</p> <ol style="list-style-type: none"> 1. Continued political stability and economic growth; 2. Normal weather patterns; and 3. Economics of SFC production remain positive.

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Project Design Summary

LOGICAL FRAMEWORK (continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose:</p> <p>To strengthen the institutional capability to generate and effectively transfer technologies and seed required to increase and sustain SFC production on small farms.</p>	<p>Conditions that will indicate purpose has been achieved:</p> <p>End of project status:</p> <ol style="list-style-type: none"> 1. Improved SFC varieties and production practices, appropriate to regionally differentiated farming conditions, being identified and disseminated farmers; 2. Research strategies and priorities being set on the basis of farmer and market needs. 3. Upgraded and rationalized SFC seed processing and marketing system in operation meeting a minimum of 10% of annual SFC seed requirements with a growing private sector role in certified seed production and marketing; 4. Increased understanding of SFC cropping patterns and of social and economic factors affecting production reflected in DOA decision making; and 5. Integrated intra-divisional management system for SFC-related activities in operation. 	<p>Project Evaluation:</p> <ol style="list-style-type: none"> 1. Project records, including Department; 2. Site visits; 3. DOA program; and 4. Project funded and other studies. 	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> 1. DOA able to recruit and retain quality personnel; and 2. GSL maintains priority on SFC.

Project Design Summary

LOGICAL FRAMEWORK (continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:	Means of Verification:	Assumptions for Achieving Outputs:
1. Increased number of better trained personnel engaged in SFC agro-socio-economic research, extension and improved seed systems;	1. Sixty-one advanced degrees 583pm of short-term training; 2. Seven regional research farms and four seed farms and one seed processing center with upgraded physical facilities and equipment;	1. DOA records; 2. Project evaluations; 3. Site visits; 4. Project audit; and 5. Agro-socio economic studies.	1. Timing and quality of inputs to specifications; and 2. AEARP and SCS projects proceed as planned.
2. Improved physical facilities, seed storage and handling, laboratories, green houses, etc., at research stations and seed farms;	3. Increased extension input into research programming, improved design and implementation of on-farm trials, improved training of extension staff, especially SMS and SMD;		
3. Effective linkage between research, improved seed, extension and training for SFC;	4. Farm-level studies program of Division of Economics and Projects established and continuing to monitor agricultural development variables on a long-term basis, number of analyses based on these studies completed, increased multi-disciplinary work involving physical, biological and social sciences underway with both DOA and outside personnel in the latter disciplines participating;		
4. Series of socio-economic studies completed;			
5. Improved linkages in place between Department of Agriculture, International Research Institutes and other national agricultural research seed centers;	5. Regular exchange of information among personnel through programmed training, visits and workshops;		

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Project Design Summary

LOGICAL FRAMEWORK (continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																																																	
<p>Outputs:</p> <p>6. Improved seed production, processing and distribution system in operation;</p> <p>7. Increased numbers of high yielding varieties of SFC;</p> <p>8. Increased and broadened germ-plasm collection of SFC; and</p> <p>9. Increased knowledge of SFC cropping patterns</p>	<p>Magnitude of Outputs:</p> <p>6. Improved seed quality, reduction of losses, adequate and timely supply;</p> <p>7. Systematic release of improved SFC varieties tailored to specific agro-climatic conditions;</p> <p>8. Regularised introduction of potentially valuable germ-plasm being utilized and maintained; and</p> <p>9. Development and extension of cropping systems with appropriate SFC components.</p>	<p>Means of Verification:</p>	<p>Assumptions for Achieving Outputs:</p>																																																																	
<p>Inputs:</p> <p>Type:</p>	<p>Quantity (\$'000)</p> <table border="1"> <thead> <tr> <th></th> <th><u>AID</u> Grant</th> <th><u>GSL</u> Loan</th> <th colspan="2"><u>TOTAL</u></th> </tr> </thead> <tbody> <tr> <td>1. Technical Assistance</td> <td>3,115.4</td> <td>-</td> <td>121.6</td> <td>3,237.0</td> </tr> <tr> <td>2. Training</td> <td>1,984.4</td> <td>-</td> <td>11.0</td> <td>1,995.4</td> </tr> <tr> <td>3. Commodities</td> <td>-</td> <td>2,078.9</td> <td>33.8</td> <td>2,111.7</td> </tr> <tr> <td>4. Facilities</td> <td>-</td> <td>731.7</td> <td>262.3</td> <td>994.0</td> </tr> <tr> <td>5. Personnel</td> <td>-</td> <td>-</td> <td>1,538.9</td> <td>1,538.9</td> </tr> <tr> <td>6. Operations & Maintenance</td> <td>-</td> <td>-</td> <td>1,177.6</td> <td>1,177.6</td> </tr> <tr> <td>7. Evaluation</td> <td>125.0</td> <td>-</td> <td>6.9</td> <td>131.9</td> </tr> <tr> <td>8. Social & Economic Research</td> <td>200.0</td> <td>-</td> <td>-</td> <td>200.0</td> </tr> <tr> <td>9. Central Project Cost-Sharing</td> <td>140.0</td> <td>-</td> <td>-</td> <td>140.0</td> </tr> <tr> <td>10. Contingency</td> <td>333.9</td> <td>168.6</td> <td>157.5</td> <td>660.0</td> </tr> <tr> <td>11. Initiation</td> <td>1,964.3</td> <td>557.6</td> <td>1,851.4</td> <td>4,373.5</td> </tr> <tr> <td>TOTAL PROJECT COSTS</td> <td>7,863.0</td> <td>3,537.0</td> <td>5,160.0</td> <td>16,560.0</td> </tr> </tbody> </table>		<u>AID</u> Grant	<u>GSL</u> Loan	<u>TOTAL</u>		1. Technical Assistance	3,115.4	-	121.6	3,237.0	2. Training	1,984.4	-	11.0	1,995.4	3. Commodities	-	2,078.9	33.8	2,111.7	4. Facilities	-	731.7	262.3	994.0	5. Personnel	-	-	1,538.9	1,538.9	6. Operations & Maintenance	-	-	1,177.6	1,177.6	7. Evaluation	125.0	-	6.9	131.9	8. Social & Economic Research	200.0	-	-	200.0	9. Central Project Cost-Sharing	140.0	-	-	140.0	10. Contingency	333.9	168.6	157.5	660.0	11. Initiation	1,964.3	557.6	1,851.4	4,373.5	TOTAL PROJECT COSTS	7,863.0	3,537.0	5,160.0	16,560.0	<p>Means</p> <p>1. Department of Agriculture budget,</p> <p>2. Project records and reports; and</p> <p>3. Project evaluations and studies.</p>	<p>Assumptions</p> <p>1. AID & GSL policies and priorities unchanged; and</p> <p>2. Budgets forthcoming as planned.</p>
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ANNEX 2

Evaluation Scope of Work

EVALUATION SCOPE OF WORK

PIO/T No. 383-058-359052

(Pages 15 - 17 of original omitted)

I. Activity to Be Evaluated:

Title: Diversified Agriculture Research Project (383-0058)
LOP Funding: \$ 11.4 million
Date Project Authorized: 8/9/84
First Evaluation: 9/87
PACD: 8/31/92

II. Purpose of Evaluation:

This will be the second interim evaluation of the project. The primary purpose is to provide USAID/Sri Lanka and the Department of Agriculture with an assessment of project implementation and progress to date and to recommend any modifications to improve the likelihood of achieving the project purpose. The evaluators will assess the delivery of AID and GSL project inputs, progress towards achieving the Life of Project (LOP) implementation Plan, progress toward achieving the project purpose, the performance of the Technical Assistance contractor, and the validity of initial design assumptions and strategies. The evaluation must particularly examine whether the planned financial resources time, and technical assistance are adequate to achieve the project purpose.

III. Project Background and Summary Description:

Sri Lanka is nearing self-sufficiency in rice, its staple food grain. Given present trends and new Mahaweli lands still to come into production, downward pressure on rice prices together with decrease profitability of rice farming in the lower productivity areas are expected. At the same time, prospects for rice export are virtually non-existent, at least in the foreseeable future.

While the country is approaching self-sufficiency in rice, there is a growing deficit in coarse grains (primarily for livestock and poultry rations), grain legumes, oil crops, and poultry and livestock products. The Government of Sri Lanka (GSL), recognizing the need to maintain stable farm incomes and reduce foreign exchange expenditures,

and conscious of declining nutritional status and inefficient land and water use, is moving from a policy of rice self-sufficiency towards one of agricultural diversification, with special emphasis on subsidiary field crops (SFC) under both rainfed and irrigated conditions.

Diversification in field crop production, however, faces technological and institutional constraints. Because of the past emphasis on rice production, the SFC have been generally neglected. Research work on the SFC has not been effectively supported and directed, with the result that relatively few appropriate, improved production technologies have been developed. This neglect has carried through to the seed and extension programs, with the net result that both prevailing SFC production technologies, as well as the infrastructure to generate and support improvements, have remained at very low levels of development.

The purpose of this project is to strengthen the capability of the Department of Agriculture (DOA) to generate and effectively transfer technologies and seed required to increase and sustain SFC production on small farms. To accomplish this objective the project will assist in upgrading the capability of the DOA to program and carry out sound agroclimatological and farmer-relevant research; effectively transfer new and adapted technologies to farmers; and ensure the supply of quality SFC seed. Private sector efforts will be enlisted in undertaking the latter. This institution-building effort will entail a quantitative and qualitative expansion in staff; strengthened management capability; improved facilities for research, seed production/processing and staff housing at remote locations; more and better equipment to support SFC activities; increased mobility for DOA staff, and increased funding for SFC-related programs. In an effort to improve the effectiveness and impact of research, the project will seek to institutionalize the use of multidisciplinary farming systems approach to research and extension. In a departure from traditional Sri Lankan agriculture, support for sustainable SFC production will also be directed at irrigated lands, particularly in the Mahaweli Area where up to an estimated 40% of the irrigable lands is unsuited for paddy production (due largely to soil conditions).

AID funds will assist in financing the project's four principal components: strengthened SFC research capability, improved extension, improved seed production and distribution, and strengthened project-specific and overall DOA management capability. The project will provide assistance to seven Regional Research Centers (RRC) and In-Service Training Institutes, five Seed Processing Centers, four Seed Farms, and to DOA headquarters in Peradeniya. Main project inputs (AID and GSL) include technical assistance; long- and short-term training, some of which will be provided in-country at the Postgraduate Institute of Agriculture; construction and renovation of facilities (laboratories, seed processing and storage facilities, staff quarters); commodities (laboratory, farm equipment); new staff; operating budget; and funds for evaluation, several project workshops, AID/W central project cost sharing, and economic and social research.

By the end of eight years, this integrated program in subsidiary field crops (SFC) is expected to result in: (1) improved SFC varieties and production practices, appropriate to regionally differentiated farming conditions, being identified and disseminated to farmers; (2) research strategies and priorities being set on the basis of farmer and market needs and opportunities; (3) upgraded and rationalized SFC seed production and marketing system operating to meet a minimum of 10% of annual SFC seed requirements, with a growing private sector role in certified seed production and marketing; (4) increased understanding of SFC cropping patterns and of social and economic factors affecting production being reflected in DOA decision making; and (5) an integrated inter-divisional management system for SFC-related activities.

The specific outputs to be achieved under the project are:

- (a) an increased number of better trained GSL personnel engaged in SFC agro-socio-economic research, extension, and improved seed production, processing and distribution.
- (b) improved physical facilities (seed storage and handling, laboratories, greenhouses, etc) at seven regional research farms, four seed farms, and five seed processing centers;
- (c) effective linkages established for SFC among research, extension, training, and improved seed operations by increased extension input into research programming, improved design and implementation of on-farm trials, a better-trained extension staff, closer plant breeder-seed production linkages;
- (d) social and economic research program of the Division of Economics and Projects upgraded including monitoring of SFC production and marketing variables on a long-term basis, a number of analysis based on these studies completed and increased multi-disciplinary work involving physical, biological, and social sciences underway involving both DOA and outside personnel;
- (e) improved linkages in place between the DOA, International Research Institutes, and other national agriculture research centers, with regular exchange of information among personnel through programmed training, visits and workshops;
- (f) improved SFC seed production, processing and distribution system in operation which assures better seed quality, reduction of losses, and a timely and adequate supply, with a limitation of the public sector's role in SFC seed production to maintenance/production of breeder, foundation and registered

classes of seed and an expansion of the private sector's role;

- (g) high yielding improved varieties of SFC, tailored to specific agro-climatic conditions, developed and systematically released to farmers;
- (h) increased and broadened SFC germplasm collection and the regularized introduction of potentially valuable germplasm to research farms in a manner that assures proper use and maintenance; and
- (i) increased knowledge of SFC cropping patterns.

Technical, advisory, administrative, management, training and other relevant services as required to achieve the project objectives are being provided by the selected contractor (Development Alternatives Inc.).

The long and short term training has been undertaken in accordance with Life-of-Project and annual training plans prepared by the Project Management Unit (PMU) with contractor assistance. The long-term training has taken place in the U.S., Sri Lanka, and third countries. Short-term training has also be undertaken in these countries, with particular emphasis on the International Research Centers.

Commodities have been procured directly by the DOA, either acting on its own behalf, or through a U.S. procurement service agent (PSA) for most off-shore procurement.

Construction has been managed by the MADR/DOA, which has contracted with a competitively selected local architect/engineering (A/E) firm. The firm has completed all plans, specifications and cost estimates and is supervising construction/renovation activities carried out by local construction firms, which have also been competitively selected. The construction element of the project is monitored by the Civil Engineering Division of the DOA, reporting to the PMU.

Project reviews have been held regularly, and have involved the MADR, DOA, the TA/training contractor and USAID. These reviews have examined implementation progress and problems revised the life-of-project workplan and have provided input for the GSL's project budget formulation for the following calendar year.

Seminars and Workshops, such as an implementation workshop and farming systems research workshop, have been developed by the DOA and the TA/Training contractor.

Social and Economic Studies have designed and monitored by a social science review sub-committee established by the Project Coordinating Committee (PCC).

The project has also utilized AID/Washington-managed projects for

certain short-term TA and training programs.

The first project evaluation provided constructive recommendations which have been resulted in a number of modification to implementation. The two major changes were modifications to strengthen the long term split training program and an amendment to the Technical Assistance to increase the level of effort. The remaining recommendations are in varying stages of implementation.

III. Statement of Work:

The evaluation team will prepare an evaluation report which addresses the following major issues and specific questions:

(1) What progress has been made towards institutionalizing a useful research program for SFCs?

- Has the L.O.P. workplan been accepted by the D.O.A. as a D.O.A. workplan for the subsidiary field crops?
- Have the project research priorities been logically formulated? Is there indication that the crops on which priority is placed have reasonable market potential (domestic or international) and profit potential for farmers.
- Are progress of the FSR/E pilot projects progressing satisfactorily?
- How can DARP benefit from collaboration with MARD and other projects in this area? How can MARD and the World Bank ARP benefit from DARP findings?
- What progress has been made towards defining and undertaking the socio-economic studies? Are the Socio-economic studies being used effectively to establish research priorities and policy? Has the DAEP been well integrated with the DOA research process?
- Has the DOA budget and resources shifted enough to adequately support SFC research? Are adequate recurrent financial, physical and human resources being provided to conduct effective on-farm trials, demonstrations and other extension efforts?
- Are the linkages between the D.O.A. Research, Extension and Training Divisions; Universities; farmers effective? Can the flow of information be accelerated or improved?

- Has the project taken steps to build linkages with International Agriculture Centers and other National Research/Seed Centers? What have been the benefits of these linkages and what additional input is needed to ensure they continue after the project termination?

(2) What progress is being made toward upgrading SFC seed production, processing and marketing?

- Has progress towards privatization of the seed industry been satisfactory?
- Does the project coordinate with other donors? Is greater coordination needed?
- Following completion of the pilot projects, what is the GSL's plan to evaluate the results and make appropriate changes in national seed policy and legislation?

(3) Assess the progress of the training component to date.

- What training has been conducted to date? Is the selection of trainees and training programs contributing to achieving the project purpose?
- What has been the progress towards implementation of recommendations from the first evaluation regarding the split training program and what has been the impact of changing the training program?
- Have the project workshops been effective in achieving their objectives? What additional workshops may still be needed?
- Is the DOA receptive to management training?
- Are the returned trainees applying their training on project activities?

(4) What progress has been made towards strengthening the management capability of the DOA?

- What specific project interventions have been effective in improving management performance of the DOA? Is it likely that current plans for management upgrading will be sufficient to meet project objectives?
- Is project funding for management interventions adequate to achieve substantial results?
- How might the DAR? project cooperate with the new World Bank

Agricultural Research Project to leverage resources and prevent duplication of effort?

- In what areas and levels of management should the project concentrate resources?

(5) Is satisfactory progress being made to accomplish other project outputs? What are the prospects of the project achieving the project purpose and End-of-Project Status (EOPS)?

- Does it appear likely that project inputs, as they have occurred and are being planned, will achieve expected outputs and EOPS?
- Is input delivery on schedule? Is progress towards achievement of the other planned outputs of the L.O.P. workplan satisfactory? (eg. construction at research centers.)
- What progress has been made towards implementation of a DOA mass media campaign for SFCs?
- Has the GSL provided in a timely manner, sufficient Department of Agriculture (DOA) support staff to implement the project?
- Has GSL counterpart funding been adequate to achieve project purpose?
- Have the identified "action agents" followed up on recommendations from the first project evaluation?

(6) Does the project have a satisfactory system in place for monitoring project implementation, achievement of outputs, and purpose level indicators?

- What has been the progress in conducting and analyzing the baseline survey? What have been the nature of the delays?
- When analyzed, will the baseline survey be useful for measuring changes in SFC production and farming practices?
- Is the baseline data being fully exploited by the DOA and other GSL institutions? What steps can be taken to make more use of the data?
- How and when should the survey be repeated for purpose and goal impact evaluation?

(7) Has the role, performance, and deployment of the Technical Assistance Contractors been satisfactory?

- Does the project management system function effectively? Has the DAI TA team effectively contributed to achieving the project purpose? Has DAI been responsive to the project needs of the Department of Agriculture?
- Are the number of person months of service budgeted in the DAI Contract adequate to achieve the project purpose? Is there need for further long term technical assistance in other specific fields?
- How the RDC performed under its contract for architecture and engineering services?
- How has DAI and IIE performed in implementing the participant training component of the project.

(8) Is the basic design of the project still valid? Are design modifications recommended?

- Is eight years a realistic timeframe to accomplish the project purpose?
- If a project extension is necessary, what level of effort, which T.A. disciplines and which project elements should be adjusted?
- Are the assumptions in the logframe or other parts of the project design still valid?
- Do the priorities within each of the project components remain consistent with national priorities established in the National Food, Agriculture, and Nutrition Strategy? Based on the experience with this project, are there any ways in which either project priorities or national strategic priorities should be reconsidered?
- What are the major implementation problems? How are they being addressed? Are the measures taken appropriate?
- As a result of this project, has the Department of Agriculture improved its linkages and co-ordination with the PGIA, other Universities, Mahaweli Economic Authority and the Irrigation Department?
- How have external factors affected project implementation? Are there indications that external factors will hamper achievement of the project purpose?

(9) To what extent are both men and women participants and beneficiaries of the project?

- How many were men and how many women have participated in different types of project training and workshops? (This could be presented in tabular form, noting where gender breakdown is not possible.)
- How do these participation figures compare to the proportion of men and women employed in the Department of Agriculture position relevant to this project?
- Are the management and other agricultural roles of both men and women in SFC production adequately understood in Sri Lanka? To what extent has research conducted, data gathered, or technologies developed by DOA with support from this project been responsive to the involvement of both men and women in the SFC sector?

In any of the above areas, or others identified by the evaluation team, special attention should be focused on identifying any aspects of the project where implementation is substantially behind schedule and on suggesting practical means of overcoming implementation problems.

In the evaluation report, the evaluation team will distinguish clearly between their findings (i.e., the evidence), their conclusions (i.e., interpretations and judgement about the findings), and their recommendations. Clearly indicate the agency or unit responsible for implementing recommendations.

IV. Methods and Procedures

- A. In conducting the evaluation, the evaluators will:
 - (1) review all relevant project documents;
 - (2) interview as many key project personnel as possible, particularly including those from the Ministry, the Department of Agriculture, USAID, and the technical assistance contractors; and
 - (3) visit at least two Regional Research Centers and two seed processing centers.

B. All project files will be available to the evaluators in the office of the Project Manager, Food and Agricultural Development Office, USAID/Colombo. A review of the following background documents is essential:

- Project Paper
- Project Logical Framework (logframe)
- Grant and Loan Agreements
- Updated L.O.F. Workplan
- DAI contract and Scope of Work
- USAID quarterly and six-monthly project reports
- DAI monthly and quarterly reports
- Socio-economic studies completed, in-progress and planned
- The GSL National Agriculture, Food, and Nutrition Strategy Paper and supporting task force papers written in formulation of the strategy
- Reports and publications produced by the project

C. Key persons to be interviewed by the team will include the following: the USAID Project Officers, DOA Project Manager, DAI Chief-of-Party, DAI Team members, DOA Director and Deputy Directors, MADR Secretary and Additional Secretary.

V. Logistic Support

The Research Administrator/Management Specialist shall use funds provided in the budget to arrange for car rental, micro-computer rental, office materials, report reproduction, local secretarial support, office space, and any other miscellaneous expenses.

VI. Level of Effort

Services of the evaluation team members will be required for 39 working days. A six-day work week is authorized in-country.

VII. Reports

The Team Leader shall be responsible for submitting a draft evaluation report no later than 30 working days after the evaluation team has begun work. Review comments will be given to the evaluation team within 5 working days of submission of the draft. Fifty copies of the final printed report shall be submitted to the USAID project officer prior to the departure of the team leader from Sri Lanka. The report shall address all questions contained in the Scope of Work and shall include but not be limited to the following sections:

1. Title page
2. Table of Contents
3. A Basic Project Identification Data sheet (outline attached, attachment 5)
4. An executive summary (see attachment 6). (This section will be used for the agency's computerized record of evaluations, so must be able to stand alone as a separate document. It is limited to three pages, single spaced, and should contain all elements required on page 25 of the attached ANE Bureau Evaluation Guidelines.)
5. List of Acronyms.
6. The body of the report (limited to approximately 30 pages with any especially lengthy analysis or listing of data placed in the Appendices).
7. Conclusions and Recommendations
8. Any useful annexures or appendices (including the evaluation scope of work, the logical frame work with indications of any modifications during the life of the project, the description of the methodology used in the evaluation and a bibliography of written works consulted.

All copies of the draft report shall clearly be labeled, "DRAFT". The title page of the final report shall include the following disclaimer: "This report presents the independent findings and recommendations of an evaluation team. It does not necessarily represent the official views of the Government of Sri Lanka or the Agency for International Development."

A debriefing will be scheduled at USAID around the time of the submission of the draft report. A similar debriefing should also be scheduled in Peradeniya for the Department of Agriculture.

VIII. Relationships and Responsibilities

The evaluation team will report to the USAID DARP Project Officer and is responsible to him for completion of the evaluation activities. The AID/W Backstop Officer for the evaluation team will be the ANE/TR Officer responsible for Sri Lanka.

IX. Team Members

Composition. The evaluation team will consist of four persons: (1) an Agricultural Research Administrator/Management Specialist/Team Leader, (2) an Agricultural Economist, (3) a Seed Specialist and (4) a Research Agronomist.

Qualifications. For all team members, experience with Asian agricultural systems is essential. Extensive field experience in one or more Asian countries, preferably including South Asia, is highly desirable. Strong writing skills are necessary.

The Team Leader/Agricultural Research Administrator/Management Specialist should have (1) a Ph.D. in an Agronomic Field, (2) a minimum of eight ears experience in agricultural research administration, including at least four ears in developing countries, and (3) experience with project evaluation.

The Agricultural Economist should have (1) a Ph.D. in agricultural economics, (2) a minimum of eight ears experience with interdisciplinary agricultural research programs, including at least four ears in developing countries, and (3) direct experience with analyses required for setting priorities and allocating resources within a research program budget.

The Seed Specialist should have (1) an graduate agronomic degree specializing in seed production and processing and (2) a minimum of marketing, including at least four ears in developing countries.

The Research Agronomist should have (1) Ph.D. in an agronomic field, (2) a minimum of eight ears experience in agronomic field research, including at least four ears in developing countries, and (3) direct work experience with FSR/E projects or programs.

Responsibilities. The Team Leader/ Research Administrator/Management Specialist shall assign specific evaluation and report writing responsibilities to the team members and coordinate the team's activities with his own to ensure complete coverage of all the items included in the Statement of Work. The Team Leader shall be direct responsible for the completion and timely submission of acceptable draft and final reports. The budget for all in-country evaluation expenses is contained in the budget; and the Team Leader shall make arrangements and payments for in-country transportation or car rental, micro-computer or other equipment rental, office supplies, photocopying and report reproduction, Secretarial support, office space (if required) and other miscellaneous expenses.

PAGES 15-17 TO BE INSERTED HERE

OUTLINE OF BASIC PROJECT IDENTIFICATION DATA

1. Country:
2. Project Title:
3. Project Number:
4. Project Dates:
 - a. First Project Agreement;
 - b. Final Obligation Date: F---- (planned/actual?)
 - c. Most recent Project Assistance Completion Date (PACD):
5. Project Funding: (amounts obligated to date in dollars or dollar equivalents from the following sources)
 - a. A.I.D. Bilateral Funding (grant and/or loan) US\$
 - b. Other Major Donors US\$
 - c. Host Country Counterpart Funds US\$
 - Total: US\$
6. Mode of Implementation: (host country or A.I.D. direct contractor? Include name of contractor).
7. Project Designers: (organizational names of those involved in the design of the project, e.g., the Government of Sri Lanka, USAID/Colombo, and the International Science and Technology Institute [ISTI]).
8. Responsible Mission Officials: (for the full life of the project)
 - a. Mission Director(s):
 - b. Project Officer(s) :
9. Previous Evaluation(s) :

EXECUTIVE SUMMARY OUTLINE

The executive summary is a two- to- three-page, single-space document containing a clear, concise summary of the most critical elements of the report. It should be a self-contained document that can stand alone from the report. The summary should be written in such a way that individuals unfamiliar with the project can understand the project's basic elements and how the findings from the evaluation are related to it without having to refer to any other document.

1. Name of Mission or A.I.D./Washington Office initiating the evaluation, followed by the title and date of the full evaluation report.

2. Purpose of the activity or activities evaluated. What constraints or opportunities does the activity address; what is it trying to do about the constraints? Specify the problem, then specify the solution and its relationship, if any, to overall Mission or Office strategy. State the purpose and goal from the Logical Framework, if applicable.

3. Purpose of the evaluation and methodology used. Why was the evaluation undertaken and, if a single project or program evaluation, at what stage-- interim, final, ex post? Briefly describe the types and sources of evidence used to assess effectiveness and impact.

4. Findings and conclusions. Discuss major findings and conclusions based on the findings as related to the questions in the scope of work. Note any major assumptions about the activity that proved invalid, including policy-related factors. Cite progress since any previous evaluation.

5. Recommendations for this activity and its offspring (in the Mission country or in the office program). Specify the pertinent conclusions for A.I.D. in design and management of the activity, including recommendations for approval/disapproval or for fundamental changes in any follow-on activities. Note any recommendations from a previous evaluation that are still valid but were not acted upon.

6. Lessons learned (for other activities and for A.I.D. generally). This is an opportunity to give A.I.D. colleagues advice about planning and implementation strategies: how to tackle a similar development problem, key design factors, and factors pertinent to management and to evaluation itself. There may be no clear lessons. Do not stretch the findings by presenting vague generalizations in an effort to suggest broadly applicable lessons. If items 4-5 above are succinctly covered, the reader can derive pertinent lessons. Conversely, do not hold back clear lessons even when they seem trite or naive. Address particularly the following issues:

- Project design implications. Findings/conclusions about this activity that bear on the design or management of other similar activities and their assumptions.

- Broad action implications. Elements that suggest action beyond the activity evaluated and that need to be considered in designing similar activities in other contexts (e.g., policy requirements, procedural matters, factors in the country that were particularly constraining or supportive).

ANNEX 3

Suggested Modifications in the DOA Work Plan for Other Food Crops

ANNEX 3

Suggested Modifications in the DOA Work Plan for Other Food Crops

(This annex refers only to the changes proposed for the DOA Workplan of 1988 at a meeting held March 13, 1989. When these revisions are made, the document then becomes the workplan for 1989)

1. Cover Page :

RFP NO. 383-0058-003
DEPARTMENT OF AGRICULTURE WORK PLAN
FOR OTHER FOOD CROPS RELATED TO THE ACTIVITIES
OF THE DIVERSIFIED AGRICULTURAL RESEARCH PROJECT
MARCH, 1989

2. Page 1 Heading to :

DEPARTMENT OF AGRICULTURE
WORK PLAN FOR
OTHER FOOD CROPS RELATED TO THE ACTIVITIES OF THE
DIVERSIFIED AGRICULTURAL RESEARCH PROJECT
RFP NO. 383-0058-003

3. Research Management - Page 12 - 1.10.2.

1.10.2. Approach : a) Hold at least one farmer meeting annually between researchers, trainers and extensionists present to identify constraints to production as perceived by farmers.

b) identify technology to be developed by research that could improve farmers farming practices.

1.10.3. One month prior to each RTWG meeting, researchers identify and describe promising technology for discussion at the RTWG meeting for possible inclusion in Interim recommendations.
Res., Ext., SMS.

4. Crop Research - Page 13 -

Priority crops for research under DARP are as follows :

Priority 1 - cowpea, greengram
Priority 2 - chilli, onion, blackgram, sesame, pigeon pea, garlic
Priority 3 - maize, groundnut, soybean
Priority 4 - potato, manioc, sweet potato, kurakkan, sorghum, sun flower

Priority 5 - horsegram, beans (dry beans), field peas, winged bean

Blackgram and sesame were moved to priority 2, from priority 3 reflecting the favorable advantage over other Asian producers (US\$ 161/mt) at Anuradhapura vs \$273 in Bangkok, for blackgram and \$337 in Matale vs \$640 in Bangkok for sesame.

Pigeon pea and garlic were moved from priority 5 to priority 2, reflecting the outstanding performance in research trials. Pigeon pea has an excellent potential for Dry Zone cropping, both vegetable and grain types. Domestic production of pigeon pea, popular for dhal could help reduce imports of both pigeon pea and Mysoor dhal as a replacement crop.

Introduced Indonesian varieties of garlic have surpassed the endemic variety in both quality and yield and show promise for commercial development.

Sunflower was upgraded from priority 5 to priority 4, based on favorable results of trials in the Dry Zone.

Additional Crops

Economic Production and Market Studies conducted by EIED have shown several additional crops to have the potential for increasing farm income. These are included for consideration of expanded long-term research programs : grapes, pineapple, banana, asparagus, melon, capsicum, cucumber, mango, papaya, passion fruit, guava and durian.

5. Onion & Garlic - Page 19 - 5.4.

5.4. Import garlic germplasm for large trials and demonstrations.
DAI, Research Bandarawela

6. Soybean - Page 24 - 9.1.2.1 & 9.1.2.2.

9.1.2.1. Continue to introduction and selection of improved germplasm to emphasize :

- a) heat tolerance and intermediate day length
- b) appropriate maturity dates for intercropping under coconut
- c) high yielding varieties
- d) seed storability
- e) resistance to bacterial pustule
- f) varieties suitable for green vegetable
- g) water stress
- h) population studies

Sources of germplasm : AVRDC (Taiwan), IITA (Nigeria), INTSOY (USA), DAI, Soybean breeder.

9.1.2.2. Continue to conduct field trials emphasizing :

- a) fertilizer regimen : P and K rates
- b) planting depth in relation to soil type and condition
- c) planting time in relation to soil moisture conditions and anticipated requirements of the next crop
- d) plant spacings
- e) weed control
- f) supplemental water for irrigation;
- g) companion crop;
- h) rhizobium testing and local inoculum production, storage and distribution for farmer use;
- i) development of vegetable soybeans - Responsibility : Research stations, DAI.

7. Root Crops - Page 28 - 11.3.

11.3. Obtain improved germplasm of miscellaneous crops such as tomato upon request of the DOA.

8. Soil & Water Management

Page 33 - 35

17.1.1. Justification : The country is extending cultivated lands and developing (rehabilitating) irrigation and rainfed schemes. Research is needed to solve irrigation and drainage problems and utilize rainfall and soil moisture more effectively.

17.1.2.4. Undertake research on methods of irrigation of SFCs on rice basins with minimum modification. Evaluate efficiency of irrigation and land formation methods. LUD, DAI

EXTENSION, EDUCATION & TRAINING

18.1.2. Approach :

18.1.2.1. Require SMSs and experienced extension personnel
(18.1.2.4.) to serve on research commodity committees. Research, Extension, Education & Training.

18.1.2.2. SMS take responsibility to strengthen field
(18.1.2.1.) contacts between SMSs and i) researchers, ii) farmers,

iii) extension field staff, and where possible iv) SMSs of other regions. This would include visits with extension staff to research plots. At the very least, monthly dialogues should be maintained. Research, Education & Training, Extension.

- 18.1.2.3. As far as possible, involve SMSs and Extension Staff in adaptive research and demonstrations. Education & Training, Research.
- 18.1.2.4. Discuss proposed interim recommendations from researchers (previously prepared) at RTWG meetings or (18.1.2.2.) another appropriate time. The decision to accept the modification for interim recommendations will be taken jointly by the RTWG members.
- 18.1.2.5. Following recommendations from the RTWG, the DA (added) call a meeting of the DDs, plus the Chairman and Secretary of the RTWG for final approval of RTWG deliberations.
- 18.1.2.6. Change the name of Interim Research (added) Recommendations to Interim Department of Agriculture Recommendations.
- 18.1.2.7. Education & Training and Extension incorporate the (added) approved RTWG recommendations into their programs at the first appropriate season.
- 18.1.2.8. Consider increasing the number of SMSs from three (18.1.2.5.) to five at each Training Centre. DA, Education & Training.

9. Production Economics and Marketing Research - page 48-49

Delete 22.0-22.3 and change 23.1.1 to read :

- 23.1.1 Conduct studies in two regions on factors which constrain greater production of SFCs.

10. Page 3

a. Research

Crops greengram and blackgram specified.

b. Seed Production

"storage" added.

11. Page 5 - Heading reads :

"Proposed Incentives for Increased Production".

1. International changed to "World Market".

12. Page 19 - Maize - 6.1.1. reads :

6.1.1. Justification : The low level of maize yields makes production impractical to supply the feed industry and reduce imports. Significant improvements can be made in maize yield per unit area for more economic local production.

13. TRAINING

TRAINING

25.0. Objective : To upgrade the technical training of researchers and support staff through short courses at international institutions and advanced degrees at appropriate universities.

25.1.1. Justification : The development of diversified agriculture as been hampered by a shortage of research officers and support staff in several disciplines in the DOA.

25.1.2. Approach :

25.1.2.1. Long-term training : Train 60 long-term scholars for MSc and PhD degrees at universities in the US and at the PGIA, Peradeniya. The original plan included :

- a) 30 MSc degrees, 8 being full MSc degrees in the US, 17 split in the U.S/PGIA MSc degrees, and 5 full PGIA degrees
- b) 3 PhD degrees, two of which were split between US/PGIA and one a full third country degree program.

In March 1986 the DARP Management Committee amended the original plan as follows :

- a) all 30 MSc degree programs to comprise 9-12 months of course work in U.S. followed by 12 months of course work, research and thesis writing in Sri Lanka, with the degree to be awarded at the PGIA

- b) all PhD programs to be split between the US and PGIA
- c) in December 1986, USAID and DOA increased the training budget by 27 degree programs consisting of 24 Masters and 3 PhDs with a budget increase of approximately US\$ 600,000.

The first interim evaluation of DARP in October 1987 recommended continuation of split degree programs for MSc degrees. US degrees were recommended for PhD candidates, with research to be carried out in Sri Lanka.

- a) Based on a recommendation by the evaluation team, the PGIA appointed Professor H.P.M. Gunasena, and the DOA appointed Dr. N. Vignarajah to help co-ordinate the training program
- b) The possibility of joint degree programs with US universities was explored. A proposal developed by the OSU team features collaborative research and graduate programs for MS, M.Phil, and PhD degrees.

MSc programs require 15 months of course work and research at the PGIA, and 15 months at OSU to complete the course work, thesis and degree at OSU. Degrees may also be awarded at the PGIA.

PhD programs require 15 months at OSU for course work and thesis planning, 15 months at PGIA for courses and field research, and 12 months at OSU to complete the degree.

The DOA submitted their new long-term training plan in March 1988. It includes :

- a) 31 MSc degrees, 19 US/split, 4 PGIA/split and 8 third country/split
- b) 3 PhDs.

IIE/NY finalized the supplementary training budget for US\$ 1.3 million in March 1988.

DOA amended their training plan in July '88 to include a total of 59 degree programs, including 6 PhDs and 53 MScs, of which 29 scholars have either completed or commenced their programs.

Director of Agriculture signed the MOU with OSU for training of DOA scholars at that Institution. Officials of University of Minnesota, Penn State and LSU also indicated interest in signing such an agreement.

University of Peradeniya directorate has passed the OSU proposal for approval of University senate.

By end of September 1988, all 6 PhD scholars had commenced their training at US universities.

IIE/New York submitted a budget for the additional training requirements of the DOA, which included : one PhD and 26 MSc degree programs.

OSU developed operational procedures for the OSU-PGIA MOU and interviewed scholars for OSU admission. They submitted budget estimates for MSc degree training in the OSU-PGIA program relevant to DARP scholars.

The OSU options are :

- a) Program with two round trips per student, estimated at US\$ 39,157/00
- b) Program with one round trip per student, estimated at US\$ 35,307/00
- c) Standard OSU degree program estimated at US\$ 47,575/00 per student.

Scholars' English competency level is an important determining factor. Substitutions were made to meet the TOEFL requirements.

DOA training plan was further in January 1989. It consists of 1 full time US, 4 PGIA/US Split, 7 US-PGIA split and 7 third country MSc programs.

Option 1 of OSU model was recommended by DOA. The expenses of the US supervisor's visit could be accommodated under DAI-TA. To keep within the budget it was decided to consider candidates who have not completed the requirements on "first come first serve basis" subject to the availability of funds. USAID recommended a PGIA/US split, PGIA/Third country split or an Asian degree to substitute the full-time US MSc degree.

All scholars must commence training by early 1989 to complete their studies before DARP ends in August 1991.

Procedures followed for advanced degree training in the US :

- a) DOA identifies the fields of training and nominees. Each division is responsible for deciding the field of study/specialization for scholars
- b) Nominees provide adequate TOEFL/GRE scores

- c) IIE identifies US universities for placement according to DOA requirements
- d) Upon identification of the university, IIE/DARP requests DOA approval
- e) Following DOA approval, trainee arranges approval of course work and research with the PGIA Board of Study and is then admitted by the PGIA
- f) Trainee submits the research outline to the PGIA
- g) Upon approval by PGIA and relevant ministries, the DOA agreement is signed
- h) Trainee obtains leave approval at different levels of Ministry/Dept. of External Resources
- i) Final approval is obtained from USAID to utilize funds under DARP for training and US visa
- j) IIE/DARP makes necessary arrangements i.e. travel, per diem etc.
- k) Arrange for visas with IIE, New York
- l) Arrange for travel expenses and airline ticket
- m) Provide orientation before departure
- n) Collect TOEFL, GRE and other relevant documents for participants
- o) Distribute academic term reports to DOA, PGIA and USAID
- p) Report on participants in training
- q) A scholar may take a second MSc degree depending on DOA requirements and special circumstances.
- r) In case of programs under the OSU model, there is provision for a Sri Lankan counterpart supervisor to visit a university in the US.

In-country course work, research and thesis writing for the split program :

- a) The DOA approves research proposal
- b) The PGIA Board of Study approves the scholar's course work and research proposal

- c) The PGIA Board of Study assigns the local advisor and appoints the committee
- d) Trainee must transfer to PGIA 35 units of course work for a MSc or 45 units of course work for a PhD. If short, the trainee must complete the balance of course work at the PGIA
- e) A draft research proposal should be submitted to the PGIA by the second term of the US program
- f) The DOA will make the following payments to PGIA for split trainees:

Expenditure	M. Phil. (Rs.)	Ph.D. (Rs.)
Registration/year	150	150
Tuition/year	1950	1950
Examination Entry/year	250	250
Science Deposit/program	200	200
Evaluation of Thesis	1200 (400x3)	1800 (600x3)
Research Supervision	600	600
Library Deposit/program	750	750
Library Subscription/year	30	30
Total	5130 (US\$183)	5730 (US\$204)

- g) DOA will pay travelling and subsistence up to Rs. 6,000/trainee/year upon approval by the PGIA/DOA. Transport facilities will be provided, if available
- h) Wages for labour to conduct scholars' research trials will be the responsibility of the DOA
- i) DARP will pay an annual thesis/research cost equivalent to US\$ 1,080.00 (Rs. 32,400) to the scholar. Receipts must be provided for reimbursement of expenses. The funds can be utilized for consumables or equipment relevant to the scholars' research and thesis work. The scholars should be assigned to DOA Research Stations for research wherever appropriate
- j) USAID increased the thesis/research allowance to US\$ 1,200.00 (Rs. 36,000) per year

- k) Absence from study/research requires approval by the PGIA supervisor
- l) Book requirements, etc. should be submitted to the Director of the PGIA in advance
- m) Scholars will be on "study leave" while at the PGIA
- n) The PGIA or the foreign university will award the degree depending upon the program agreed upon between the DOA and the scholar
- o) The guidelines for DOA officers to follow when on postgraduate training is prescribed in Departmental Circular No. 12
- p) The DOA Training Co-ordinator was requested to submit periodic status reports indicating research development of PGIA scholars

26.1.2.2. Training plan for 1989 :

- a) Arrange admissions for scholars in US Universities Third World countries upon submission of required documentation, i.e. TOEFL and GRE scores. DOA, DAI University of Peradeniya, IIE
- b) Applications have been submitted to IIE/NY to look for placement of scholars nominated for US training
- c) A criteria was developed to nominate the scholars who were unable to get adequate TOEFL scores for Third country training. Application were submitted to UPLB and AIT
- d) Identify resident advisors for PGIA scholars
- e) The DOA has identified fields of training for 1989, TOEFL and GRE scores of candidates scholars are required before making final nominations. Scholar lists are provided when available. DOA, DAI

f) Summary of long-term training, February 1989

Scholars budgeted	59
Completed training	40
Completed training	5
Non-returnees	2
Training in the US	13
Training at PGIA	16
PhD Research in Sri Lanka	1
Third country training	3
Returning March/89 for PhD research	1
Returning August/89 for research	5
Returning June/90 for research	4
To complete degree June/89	12
To complete degree June/90	7
To complete degree December/90	3
To complete degree June/91	11
New scholars scheduled for US in June 1989	7
New scholars scheduled for UPLB/AIT June 1989	7
New Scholars scheduled for US in August 1989	5

26.1.2.3. Implementation of the training plan commenced in December 1985. Nineteen scholars started advanced degree programs during summer and fall semesters of 1986, 6 in 1987 and 3 in May 1988. Twenty-eight scholars had commenced degree programs by May 1988 and 4 had completed degrees.

Two PhD programs started at VPI, one with research in Sri Lanka. In accordance with the evaluation, two PhD scholars on split programs were changed to fill US programs. (See Tables 1, 2 and 3). The fifth PhD scholar commenced training in June 1988 and the sixth and last scholar commenced PhD training at OSU during September 1988, 2 MSc scholars who were nominated for training in Water Management started training at PGIA to do prerequisite courses to upgrade their knowledge of statistics and engineering.

Of the 40 postgraduate degree programs for DOA scholars administered by DARP to the end of February 1989, 5 scholars had completed MSc degrees, 14 are conducting research at the PGIA towards a M.Phil. degree, 2 scholars are studying the prerequisites to commence MSc coursework at a US university, 16 scholars are training in US and Asian universities and 2 scholars have left the program.

The major constraint on the degree program was identification of suitable candidates with adequate TOEFL scores. DARP conducted two short courses in English at the University of Peradeniya to upgrade performance levels.

26.1.3.1. Short-term Training : Placed approximately 95 short-term scholars for specialized training in 1986 at international centers in Asia and Africa, as well as in Israel and the US.
DOA, DAI, IIE

26.1.3.2. A total of 553 short-term person months were estimated initially, but due to budget constraints, only 265 person months were allotted. Subsequently, USAID increased short-term training by 11 person months in the US and 147 person months in a third country. The 1988 DAI contract amendment increased the short-term training budget by US\$ 350,000, which will accommodate a total of about 423 person months.

By December 1986, 108.25 person months of short-term training were completed, 12.25 in 1985 and 96 in 1986 at a cost of US\$ 158,124.11. A total of 250.5 person months were completed by the end of December 1987 at a cost of US\$ 386,900.68. By December 1988, 368.7 person months were completed at a cost of US\$.....

283 scholars have been trained for short-term training.

In 1986, 96% of the scholars were sent to institutions in third countries, such as IRRI, Philippines; IITA, Nigeria; AIT, Thailand; AVRDC, Taiwan; and Israel. The remaining 4-5 percent of the training was done in the US. By the end of 1987, training in the US increased to 11% of the total. By end of December 1988 it increased to 22.4% of the total.

Procedure for short-term training :

- a) co-ordinate with DOA to identify short-term training requirements
- b) select appropriate institutions
- c) identify participants and apply for acceptance in appropriate institutions
- d) co-ordinate with DOA and USAID to get the necessary clearances
- e) make arrangements visas, travel per diem, and airline tickets
- f) make arrangements with participants for submission of final training reports and seminars
- g) report monthly on short-term activities

DOA short-term training requirements for 1988 consist of 14.75 person months of US training and 88.45 person months in third countries.

In August 1988, DOA submitted their short-term training plan which consists of 11 US and 112 third country person months to train 74 officers for short-term training

IIE/NY budgeted 6 US and 112 third country person months short term training

ANNEX 4

Tables and Documents Related to Training

18'

ANNEX 4

Tables and Documents Related to Training

DIVERSIFIED AGRICULTURAL RESEARCH

Table 4-1: Summary of long-term training, as of February 1989

Scholars budgeted	59
Completed training	40
Completed training	5
Non-returnees	2
Training in the US	13
Training at PGIA	16
PhD Research in Sri Lanka	1
Third country training	3
Returning March/89 for PhD research	1
Returning August/89 for research	5
Returning June/90 for research	4
To complete degree June/89	12
To complete degree June/90	7
To complete degree December/90	3
To complete degree June/91	11
New scholars scheduled for US in June 1989	7
New scholars scheduled for UPLB/AIT June 1989	7
New Scholars scheduled for US in August 1989	5

DIVERSIFIED AGRICULTURAL RESEARCH

Table 4-2: Financial Status of Training as of January 31, 1989

Category	Budget Allocation	Expended through January 31, 1989
Long-term training	1,579,780.00	628,096.98
Short-term training	1,061,617.00	680,252.82
English language trng.	-	851.55
Administration	637,239.00	253,519.74
TOTAL	3,278,636.00	1,562,721.09

DIVERSIFIED AGRICULTURAL RESEARCH

Table 4-4: Number of Research Officers, by Highest Qualification, Years of Service, and by Sex, at Principal Research Centers, DOA, 1989

LOCATION	1 ZONE	2 QUALIFICATION			YEARS OF SERVICE			STAFF BY SEX		TOTAL
		PhD	MSc	BSc	4 CR LESS	5-10 YRS	11 CR MORE	M	F	
		<hr/>								
<u>Regional Agricultural Research Centers³</u>										
<u>Research Officers :</u>										
Angunakolapelessa	LDZ	1	6	9	8	4	4	12	3	16
Aralaganwila	LDZ	0	6	13	11	5	3	12	7	19
Bandarawela	LDZ	2	9	8	4	8	7	15	4	19
Bombuwela	LCWZ	0	8	11	0	12	7	13	6	19
Gannoruwa (CARI)	MCWZ	8	27	10	3	28	14	24	21	45
Kilinochchi	LDZ	1	10	5	2	7	7	8	8	16
Maha Illuppallama	LDZ	3	14	9	6	12	8	22	4	26
Makandura	LCIZ	4	7	7	4	9	3	12	4	16
<u>Other Centers</u>										
<u>Research Officer :</u>										
Central Rice Breeding Station	LCIZ	1	9	4	2	6	6	11	3	14
Land and Water Use Division	N/A	1	5	1	0	2	5	6	1	7
Plant Genetics Resources Center	N/A	1	3	2	3	1	2	3	3	6
Soil Conservation Unit	N/A	1	1	1	0	2	1	3	0	3
Sub Total - Research Officers		0	105	80	43	96	67	141	64	206
Sub Total - Experimental Officers ⁴		0	14	43	3	41	13	43	14	57
Total		21	119	123	46	137	80	184	78	263
Percentage		8	45	47	18	52	30	70	30	100

Note 1 : LC - Low Country; MC - Mid Country; UC - Up Country; DZ - Dry Zone; IZ - Intermediate Zone; WZ - Wet Zone.

Note 2 : Includes Administration, Heads of Units

Note 3 : Includes staff at Associated Research Stations

Note 4 : Experimental Officers from all units combined; includes eleven officers with less than BSc

Source: Compiled from unofficial data supplied by Division of Research, DOA

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DIVERSIFIED AGRICULTURAL RESEARCH

Table 4-3: Number of Professional Staff and Degree Achieved by Departments, Faculty of Agriculture, University of Peradeniya

Department or Unit	Ph.D.	M.Sc.	B.Sc.	Staff by Sex		Total
				M	F	
Main Campus						
Agricultural Biology	10 (4)	1 (1)	1	7	5	12
Agricultural Economics & Extension	8	1	2 (1)	10	1	11
Agricultural Engineering	7 (1)	0	4	10	1	11
Animal Science	5 (2)	3 (1)	5 (1)	9	4	13
Crop Science	10 (1)	1	5	15	1	16
Food Science & Technology	2 (1)	1	2 (2)	2	3	5
Soil Science	4	2 (1)	0	5	1	6
Maha Illuppallama						
Sub-campus	0	4	7 (1)	10	1	11
Total	46 (9)	13 (3)	26 (5)	68	17	85
Percentage	54	15	31	80	20	100

Note : Figures in '()' denote Female

Source: Compiled from Newsletter, Faculty of Agriculture, University of Peradeniya, Sri Lanka, 1988.

82

Part of Report Submitted
by
AGRICULTURAL GRADUATES ASSOCIATION
April 12, 1989

PGIA BASED SPLIT POST GRADUATE PROGRAMME
(Report No. 2)

The main objective of the Post Graduate Training should be to provide an opportunity to the officers of DOA to acquire adequate knowledge and skills with respect to the field of specialization and help them perform efficiently with competence. To achieve the above objective DOA should provide the best possible training to its officers. This could be achieved only by exposing the officers to outside world in the developed countries where latest scientific development is taking place. However, in the recent past to satisfy certain Institutes and their staff, the DOA has given into the donor agencies and the pressure of those institutes have forced the DOA to develop the split post graduate programme.

The main reasons for adopting a split postgraduate training programme are as follows :

1. Undertake relevant in-country research
2. Increase number of participants trained
3. Give all students an overseas training experience
4. Homogenize the long-term training to prevent disparities
5. Utilize the investment made in PGIA
6. Fully develop PGIA capabilities and recognition, and
7. Overcome attrition problems

The above reasons were extracted from a USAID letter dated 22nd July, 1987 addressed to DA. It is very disheartening to mention that in no document of DOA the objectives of the split programme was spelt out. This clearly indicates that DOA has allowed outside agencies to meddle with the sovereignty of DOA. It is the duty of DOA to exploit possibilities of training our officers and lay down objectives.

If one examines the reasons No. 5 and 6 which has no benefit to the Department of Agriculture (DOA). Further an institute cannot force recognition. It should earn recognition by its own activities. When consider the 1st objective stated above, most of the scientists in the DOA as well as in the other agencies engaged in agriculture have not undertaken relevant in-country research as their research problems. Nevertheless, in general they have obtained a better quality degree in
emit retrohs a
doing well in their research activities, carrier and some have even gained international reputation.

In addition, even if all the officers in DOA take up relevant in country research, it will not help to solve all the agricultural problems of Sri Lanka. As such DARP Programme could only solve just a minute fraction of the agricultural problems. Therefore, it is advisable for the DOA to train officers in better institutes abroad. It will benefit and help the country in the longrun in solving the pressing agricultural problems.

There is no doubt that the number of participants trained could be marginally increased by a split programme but they fail to complete the degree within the time schedule. Thus there is a delay in reporting for work. This hampers the smooth and normal functioning of the DOA activities by not having sufficient staff to implement and execute the DOA activities. Thus the intangible loss to the country is greater than the tangible gain in adopting a split programme.

If the PGIA is capable of providing a quality degree and sufficient exposure to latest developments in the scientific field then there is no need to give officers an overseas training. Thus the 3rd reason implicitly accept the fact that PGIA is incapable of providing quality training.

The objective of homogenizing the long-term training does not arise as different universities require different standards, and only those that qualify will gain entrance to better universities and others have to gain admission to some other university. Even with split programme the objective of homogenizing has not fully achieved. At this point it is very important to mention that in deciding the objectives of split programme no consideration is given to quality of the degree.

In developing and implementing the split post graduate training programme no ex-ante evaluation was done by the DOA to study the pros and cons of such a programme. The split programme was launched without a proper basis and implementation was not properly spelt out. Thus ad hoc decisions were taken and they further created complications and rtsurf ot dael officers in the DOA resulting in loss of morale and competence. Further, due to inconsistent policies of the DOA and project management there is a danger of lapsing the allocated funds for long-term training under DARP.

The Agricultural Graduates' Association has submitted a report on the same subject to the directorate of the Department of Agriculture in August 1987, with copies to Director, PGIA., USAID mission in Sri Lanka, Dr. Bill Selleck, Chief of Party, DARP., and to few others. The report identified the deficiencies of PGIA as an institute offering post graduate degrees, problems, involved in the local degree programme and also suggested alternatives. However, this report did not receive the attention that it should receive.

The directorate of the DOA went ahead with the said programme. The Director, PGIA, on receipt of the letter responded quickly by his letter PGIA/A/ACD/55 dated 21st September 1987, and mentioned that the report contains some misrepresentations and misinterpretations that he will send his comments in due course. Subsequently he wrote to the AGA and informed that the decision of their committee meeting was not to reply as the document was not signed (Letter No. PGIA/A/ACD/55 dated 13th October 1987). In spite of submitting a signed copy of the document on 12th November 1987, with a covering letter and repeated reminders, Director PGIA, failed to send his comments. This clearly indicate PGIA's inability to prove its capabilities and disprove our comments. However, the association submitted a copy of the document to the evaluation team and made representations. The evaluation team accepted the fact that PGIA is at present not capable of handling Ph.D programmes. But the Masters programmes were implemented the way it was decided before. Today we are experiencing the following problems that was indicated by the association about an year ago.

To date, 38 officers have commenced post graduate programmes under DARP, of which five are Ph.D programmes while rest are masters programmes. Among these 38 officers, 18 officers were expected to complete their masters programmes by end of 1988 or before. However, only six officers have completed the degree programmes on or before the schedule date. It is very important to mention that those officers who completed the programme were either full time students at USA or opted to obtain a non thesis degree. At present eight students have returned to Sri Lanka to complete their Masters programmes and were expected to complete the Masters programme by the end of 1988. But non have completed due to inherent deficiencies of PGIA. Had they given the opportunity to complete the degree in USA this problem would not have come up. Thus the split programme has created a situation where the Department has failed to get the services of these officers in time contributing to a substantial loss to the Department and country. Even a full-time PGIA student and the PGIA/IRRI student have not yet completed their programme. This very clearly shows the inability of PGIA to handle the research compcnent of post-graduate programmes.

On or before the end of 1989 another four students have to complete their post-graduate degree programmes. Available information will no doubt reveals that the officers on PGIA based split programmes will take more time than the schedule time.

Some of the reasons for the delay in completing the degree programme are :

(a) Officers from remote stations have to under go difficulties in getting adjusted to the time table which has been planned for the convenience of the PGIA academic staff where classes are held even on weekends and some public holidays.

(b) Neither residential facilities are available at Peradeniya for such an officer nor gets a sufficient financial support to seek board and lodging.

(c) Lectures are held at one place, at Peradeniya, while the research has to be conducted at another place. This invariably make officers to spend time on travelling otherwise could be utilized for academic purposes. Further, this leads to poor supervision of the research component.

(d) When an officer is abroad he/she can fully concentrate on the programme he/she is undergoing. In Sri Lanka he/she has to face unforeseen personal problems which distract him/her from academic work.

(e) The supervisors do not pay sufficient attention to the students in guiding them. There are instances where the student has to stay for more than a month after submitting the research proposal, to get comments from supervisory committee members.

(f) Adequate library, laboratory and other related facilities are not available (this issue has been very well addressed in our earlier report).

(g) Lecturers frequently postpone classes and sometimes the syllabus is not properly covered.

(h) Some of the supervisors are not competent to handle certain research studies undertaken by the students. For example a lecturer who has specialized in host plant relationships may not be capable to handle a student who is specializing on biological control, pesticide chemistry or insect taxonomy unless otherwise he has not done some research in those fields. The same applies to other disciplines too.

(i) Most of the academic staff are engaged either in administrative work, teaching at undergraduate level, engaged in consultancies, private enterprises, supervising undergraduate students (500 series), serves in committees and boards and many other non academic activities which invariably leads to poor preparation of lectures, guidance and supervision of students.

ANNEX 5

Procurement Chronology

ANNEX 5

Procurement Chronology

A. Items Already Received or ordered by December 31, 1989
(Source: DOA/DERD, 7 February 1989)

Rs 16,106,292.76 (\$644,251.71 @ Rs 25)

B. Pending Commodity Procurements as of March 31, 1989

Table 5-1 shows the chronology of pending commodity procurements as shown by USAID/Sri Lanka. It can be seen that procurement takes a

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Table 5-1. Pending Commodity Procurements as of March 31, 1989

Lot no.:	1 Micro computers	2 Vehicles & Motor cycles	3 Agr Equip	4 Agr Equip	5 Lab Equip	6 Micro Computers
Value (US \$)	40,154	47,000	120,000	54,169	352,000	95,000
Type of procurement	GSL OS	GSL OS	GSL/PSA	GSL/PSA	GSL/PSA	GSL OS
GSL submit list, specs	01/26/87	03/18/87	12/20/86	N/A	03/30/88	03/22/88
AID Approval	02/27/87	10/21/87	01/13/87	N/A	05/06/88	05/24/88
Tenders Issued	07/21/86	08/02/88	04/23/87	N/A	10/15/88	10/24/88
Evaluated, Approved or Rejected	02/15/87	01/05/89	02/14/88	/ /	/ /	/ /
Waivers	N/A	N/A	09/08/87	N/A	05/05/88	/ /
Funds committed	02/08/88	02/08/89	01/06/87	01/06/88	04/27/88	05/24/88
Letter of Commitment Issued	02/11/88	/ /	02/13/87	02/13/87	11/14/88	/ /
Shipped	N/A	/ /	N/A	/ /	/ /	/ /
Arrived, Cleared, Installed	07/01/88	/ /	09/15/88	/ /	/ /	/ /
Final acceptance	/ /	/ /	09/15/88	/ /	/ /	/ /
Payment	/ /	/ /	/ /	/ /	/ /	/ /

Notes:

OS : Off Shore N/A : Not Applicable

Notes to Table 5-1, continued:

- Lot 1: DOA delayed in advising AID how the supplied had to be paid, as there were three or four beneficiaries for this one transaction. Partial shipment received.
- Lot 2: AID forwarded the amended tender documents to DOA on 10/21/87. Final DOA approval for purchase was received on 07/88. Relevant documents awaited from DOA for issuance of Letter of Commitment for Utility Vehicles. Motorcycles will be retendered, as no bids received.
- Lot 3: This procurement has been long delayed as it has taken from August 1987 to February 1988 for the DOA to evaluate and approve the first set of offers. The part of the items that were approved have been received and paid for by the Bank Letter of Commitment.
- Lot 4: This is the part of Lot 3 that was retendered. Bid schedules received from the Procurement Services Agent (PSA) on 11/87 have been evaluated and tender board approval is still awaited.
- Lot 5: The list of items and specifications had to be revised considerably by AID as there were many inconsistencies and technical defects in the original list received from DOA. Bid analysis has been received from the PSA and evaluation completed. Awaiting Tender Board approval.
- Lot 6: On schedule. Evaluation completed. Awaiting Tender Board approval.

Source: USAID/Sri Lanka, 31 March 1989

ANNEX 6

Construction Chronology

ANNEX 6

1

Construction Chronology

Selection of A&E Services Contractor :

- January 23, 1985 - Draft RFTP and prequalification questionnaire prepared by AID
- February 15, 1985 - Above reviewed at Ministry of Agriculture Development and Research (MADR) Meeting
- March 13, 1985 - RFTP revised
- April 12, 1985 - Prequalification notice published (closing date - May 2, 1985)
- June 27, 1985 - Cabinet Tender Board decided number of responses to prequalification inadequate and directed Department of Agriculture (DOA) to publish RFTP and at same time call for qualification data
- July 5, 1985 - DOA called for proposals (closing date- July 29, 1985)
- September 3, 1985 - Evaluation Committee submitted reports
- September 11, 1985 - Cabinet Tender Board approved recommendations of Evaluation Committee on Selection of A&E Services Contractor
- April 21, 1985 - Original date by which A&E contracting procedures were to be completed
- April 30, 1985 - Completion period extended to August 31, 1985
- August 8, 1985 - GSL requested extension of deadline for execution of contract with selected A&E firm from August, 1985 to November, 1985 (2 months)

Note : ¹ Compiled from data supplied by USAID/Sri Lanka

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Construction Chronology (continued)

A&E Service Contractor

- October 8, 1985 - AID sent draft A&E Service Contract to DOA for review
- November 16, 1985 - Draft amendments suggested by Attorney General Contract Document finalized
- November 21, 1985 - GSL requested further 2 months extension of deadline to January 21, 1986
- January 24, 1986 - A further extension deadline requested by GSL
- April 30, 1986 - Contract finalized and signed

Preliminaries to Construction Program

- May 19, 1986 - Relocation of buildings from Karadian Arv to Aralaganwila agreed
- June 6, 1986 - DOA proposed further changes in the accepted building program in the A&E Services Contract
- July 31, 1986 - AID agreed to some of the changes and called for clarification of those new suggestions at four sites. (Details discussed at Project Management Committee Meeting during July, 1986)
- September 26, 1986 - AID agreed to some of the changes proposed by Deputy Directors
- October 23, 1986 - Further proposals to set up a circuit bungalow at Maha Illippallama and attend to repairs and furnishings turned down by AID
- November 18, 1986 - Preliminary plans and designs of Contract No. 1 reviewed by AID and comments sent to DOA/RDC

1
Construction Chronology (continued)

Preliminaries to Construction Program (continued)

- December 9, 1986 - Meeting of AID/RDC/DOA Engineers on preliminary plans and design Contract No. 1
 - December 12, 1986 - Directorate (DOA) approved final List of Buildings
 - January 6, 1987 - Further meeting organized by AID to seek clarification of design of Contract No. 1
 - February 12, 1987 - Final Estimate/BOQ on Contract No. 1 recommended by SE (Civil), DOA to AID
 - March 19, 1987 - Meeting arranged to work out details of other construction contracts
 - May 18, 1987 - 1st Construction Contract : PIL issued
 - June - August, 1987 - Construction Contractors selected by MADR Tender Board for 1st Contract
 - July - September, 1987 - Plans/BOQ reviewed by DOA and AID Engineers on 2nd and 3rd Contracts
 - September 15, 1987 - 2nd Construction Contract PIL issued
 - September 30, 1987 - Cabinet Tender Board approval awaited by DOA to make awards for 1st Contract
 - October 27, 1987 - Contract awarded for 1st Contract
 - December 28, 1987 - Contract No. 2 submitted Bid, Evaluation of tenders are in progress and will be completed this week.
- Contract No. 3 RDC has not submitted the amended estimates

Construction Chronology¹ (continued)

Preliminaries to Construction Program (continued)

March 9, 1988

- Contract No. 1 Tenders Awarded, Excavation and Foundation works being done

Contract No. 2 Design and Tender Documents completed. Awaiting receipt of Tender minutes to inform contractor.

Contract No. 3 Preparation of Design and Tender completed. Tender Documents and Estimates submitted for Tender Board approval

Contract No. 4 Preparation of Design and Tender Documents completed, Estimate issued to USAID for issue of Project Implementation letter.

USAID said request for opening L/C should be forwarded through CA. DOA requested SE (civil) to follow this procedure

July 6, 1988

- Contract No. 2 Agreements signed by contractors for work at Bata Ata and Bandarawela. Contract awarded for work at Angunakolapalessa. SE (Civil) will take action to cancel if this award agreement is not signed within a week

Contract No. 3 Tenders being evaluated. Will be submitted to Cabinet appointed Tender Board within a week

Contract No. 4 Cabinet appointed Tender Board meeting scheduled for July 12, 1988 to evaluate Tenders

Construction Chronology (continued)Preliminaries to Construction Program (continued)

- October 28, 1988 - Construction No. 2 Angunakolapalessa RC Construction contract cancelled according to SE/DOA. Will utilize funds for research facilities at Aralaganwila instead.
- Construction No. 3 Contract awarded. Contract agreement not signed yet
- November 9, 1988 - Construction No. 2 USAID alerted DOA regarding the faulting contractor at Batu Ata and Bandarawela in view of fact that he has been selected for award of two other sites, CARI and Alutarama
- March 16, 1989 - Except for Construction No. 1 there has been no progress in seven sites under Construction Nos. 2, 3 and 4. Most contractors have failed to sign agreements due to expiry of validity dates of their bids at the time awards were made and they requested the inclusion of provision for cost escalation in the agreements due to GSL Tender Board approval. USAID requested Director's personal intervention with MAF&C to settle this problem. The DOA Civil Engineer will take action to expedite these construction work and also submit to USAID a revised implementation schedule with a recommendation on the period of extension of the RDC, A&E Services Contract, which terminates in June, 1989

ANNEX 7

Tables and Documents Related to Social and Economic Research

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ANNEX 7

Tables and Documents Related to Social and Economic Research

A. Studies Done

A number of studies have been completed and printed under the project. (Table 7-1.)

The baseline survey was designed to permit measurement of changes in SFC production and farming practices. It is very similar to the semiannual COC study, with slightly greater detail about production, and some information on disposal of the crop. It was decided not to include consumption data because it would be very tedious to gather and such data were thought to be available from other sources. This study fell behind schedule because of the large sample, lack of computers, lack of good error-checking routines, inexperienced data-entry contractor, and lack of DAEP time to devote to writing, but it has now been finished and will shortly be printed.

The analysis of the data in this report is descriptive and limited, but the tables from which it was derived contain a wealth of detail which could support many other special studies. The data themselves are amenable to more sophisticated analyses such as the use of regression analysis for production functions, and are easily retrievable, but they may not be precise enough for such analysis. If a follow-up study is done in five years, changes in SFC production and farming practices can be measured, including the relative participation of men and women in production, but the change in farm income cannot be measured, because of the nature of the sample and data.

The other studies have all been problem-oriented, usually focussing on a single crop. The production and marketing studies used production data from the COC studies combined with informal interviews with farmers and local traders. The trend studies also used production data from the COC studies as well as estimates by extension field personnel. The seed studies were done by consultants using accounting data from the Seeds Division. The soybean studies utilize original data gathered by the authors to illuminate production, processing and marketing of soybean.

Data from these studies have been useful, for example revealing weaknesses in the marketing systems for SFCs, and helping to establish research priorities. In addition, they have suggested topics for further socio-economic research: 6 proposals for socio-economic studies concerning Subsidiary Food Crops have been approved under the Small Grant Programme of the Social Science Review Committee.

DIVERSIFIED AGRICULTURAL RESEARCH

Table 7-1. Social and Economic Studies Completed

Type	Number	Year completed
Baseline survey	1	1989
Production and marketing studies ^a	8	1988
Trend studies		
Individual crops ^b	14	1987
Combined analysis	1	1988
Other studies		
Economic assesment of Seed Production	1	1987
Seed Sales in Matale & Kurunegala	1	1989
Soybean studies ^c	3	1987-88
TOTAL	29	

^a
Groundnut and Sesame (Moneragala), Cowpea (3 districts), Greengram (NW Province), Blackgram (Vavuniya), Maize (Ampara, Anuradhapura), Soybean (Anuradhapura), Subsidiary Food Crops Mahaweli Project Systems B and C).

^b
Chilli, Maize, Sorghum, Red onion, Soybean, Potato, Groundnut, Cowpea, Greengram, Gingelly (Sesame), Blackgram, Manioc, Sweet potato, Kurakkan (Finger millet).

^c
In cooperation with the International Soybean Program, University of Illinois at Urbana-Champaign and the Soyabean Foods Research Centre.

Sources: End of Tour Reports of DAI Consultants to the project, DAEP/DARP research reports.

B. The "Floor Price" Scheme

The following remarks are based on informal interviews in addition to some reading, but seem to be substantially correct. It seemed important to include them in view of the confusion caused by the name of the Floor Price Scheme.

A "Floor Price" is established for certain commodities in Sri Lanka, including nine SFC. The floor prices for SFC from 1st January 1989 are:

1. Maize	Rs 4.00 per kg
2. Finger millet	Rs 4.50 per kg
3. Groundnut	Rs 8.00 per kg
4. Soybean	Rs 7.00 per kg
5. Sesame - Black	Rs 8.00 per kg
Sesame - White	Rs 9.50 per kg
6. Chillies (dry) I	Rs 28.00 per kg
II	Rs 26.00 per kg
7. Cowpea	Rs 8.50 per kg
8. Greengram	Rs 11.00 per kg
9. Blackgram	Rs 7.00 per kg

The term "Floor Price", however, is a misnomer, because the Ministry of Food, Agriculture and Cooperatives announces the floor price each year, but it does not stand ready to buy all produce at that price. Instead, buying is done by the Paddy Marketing Board (PMB), the Oil and Fats Corporation (OFC, buys mostly Soybean and Maize) and the Cooperative Wholesale Establishment (CWE) to the extent of their needs, not those of the farmers. The latter is a big buyer, having numerous retail outlets and cooperative shops, and it is required to buy at not below the floor price, but will also purchase at above the floor price to get the supplies it needs.

The floor price is derived from the data of the Cost of Cultivation Study. DAEP calculates a salvage price based on the data from the 5 or 6 most important districts for a particular crop:

Salvage price = (cash costs x 1.5) + (imputed value family labor x .75)

Family labor is imputed at market rates for labour.

The floor price may differ from the salvage price slightly. In the past, if it was desired to encourage production of the crop, the floor price would be raised slightly above the salvage price. The floor price, however, can also be below the salvage price. If the salvage price is higher than the CIF Colombo price, the floor price will not be raised above the CIF price.

The PMB, OFC and CWE are not required to buy locally; they can and do frequently import their requirements. They have, however, established a practice of buying in major producing areas.

When farmers get low prices in a particular area, their complaints eventually reach MAFC, which gives orders to the PMB or CWE to buy in that area. Unfortunately, many of the people selling in that area by the time these organizations arrive are the same local traders who originally bought from the farmer at low prices.

On a number of dramatic occasions in the past, a good price for a crop being harvested has been undercut by a sudden large import of that commodity by one of these organizations, which caused a sudden drop in prices. The weakness of the floor price scheme then revealed itself, since the same organizations which were to buy at the floor price had already imported most of their requirements and were not interested in buying local produce. The result was disastrous for the farmers. Such incidents help to explain the fluctuating supplies of SFCs from year to year.

It would doubtless be better to announce no floor price that the government is not prepared to maintain.

C. Economics of Subsidiary Food Crops : Establishing priorities

A number of attempts have been made to establish the priority crops to be addressed by DARP. The priorities were stated in the 1986 DOA Work Plan for Other Food Crops related to DARP, revised in the 1988 Work Plan, and again revised for the 1989 Work Plan. These priorities are summarized in Table 8-2.

1. 1986 Work Plan priorities were established by a subjective evaluation of 9 factors: high value, imported, potential export, high food value, potential support industry, good local consumption, good production potential, contribution to soil fertility, high local potential.

2. 1988 Work Plan priorities were established by adopting the suggestions of agricultural economist Luis Novarro (1987), who divided the crops into four priority categories based on calculations of 8 factors: extent of cultivation, number of families planting the crop, total production, value of production, employment generation, input use, non-labor costs and net return per hectare. The fifth priority category was added later, and the Work Plan states that a number of other factors were considered, presumably subjectively, and presumably in choosing the crops in the fifth category. These include the factors considered in the 1986 work plan, Novarro's factors, as well as research problems, and local and world production trends.

3. 1989 Work Plan priorities suggested in a recent meeting of the Project Management Committee involve changing particular crops from one priority category to another. Blackgram and Sesame were moved to Priority Two because information in the MAFC Agricultural Diversification Plan of 1987 showed that FOB Sri Lanka prices for the lowest cost districts were substantially less than FOB Bangkok prices for these commodities. Pigeon pea and garlic were moved from Priority Five to Priority Two because of outstanding performance in research trials, and sunflower was moved to Priority Four because of good results from trials in the Dry Zone.

4. Sri Lanka Export Market Information Development Project (Daines, 1988) examined 60 commodities, including grains and grain legumes grown in the Mahaweli area, and chose 18 commodities based on 7 criteria: world imports, world consumption, transport shelf life, labour content, technology requirement, availability of existing produce and the time frame in which impacts might be achieved in the Mahaweli area. Local market demand was considered, but it was found that only chillies, papaya and garlic could be absorbed to any significant extent by the local markets, and it was concluded that local markets for high priority export products should be ignored in any export plan.

DIVERSIFIED AGRICULTURAL RESEARCH

Table 7-2. Priority Crops Under Different Work Plans

1986 Work Plan	1988 Work Plan	1989 Work Plan (proposed)
Chillies	<u>First Priority</u>	<u>First Priority</u>
Onion	Cowpea	Cowpea
Greengram	Greengram	Greengram
Sesame		
Cowpea	<u>Second Priority</u>	<u>Second Priority</u>
Maize	Chillies	Chillies
Groundnut	Onion	Onion
Soybean		Blackgram
Blackgram		Sesame
Manioc		Pigeon pea
Sweet potato		Garlic
	<u>Third Priority</u>	<u>Third Priority</u>
	Maize	Maize
	Blackgram	Groundnut
	Sesame	Soybean
	Groundnut	
	Soybean	
	<u>Fourth Priority</u>	<u>Fourth Priority</u>
	Potato	Potato
	Manioc	Manioc
	Sweet potato	Sweet potato
	Finger millet	Finger millet
	Sorghum	Sorghum
		Sunflower
	<u>Fifth Priority</u>	<u>Fifth Priority</u>
	Pigeon pea	Horsegram
	Horsegram	Beans (dry beans)
	Beans (dry beans)	Field peas
	Garlic	Winged bean
	Field peas	
	Sunflower	
	Winged bean	

Sources: Department of Agriculture Work Plans for Subsidiary Crops Related to the Activities of the Diversified Agricultural Research Project, 1987 through 1989.

The final screening involved field market surveys in 12 potential foreign markets, after which the 18 products were ranked by market interest and competitive position. Several categories emerged:

- o Springboard products: very large markets and favourable competitive position: Grapes, Strawberries, Asparagus, Pineapple and Banana
- o General market priority products: markets in more than one geographical area: Mangoes, Melons, Shrimp/Prawns
- o Single major market products: dried Shitake mushrooms and potted orchids for the Japanese market.
- o Targeted market opportunities: small markets, poor competitive position, but opportunities for a few hundred hectares of production: Gherkins for Australia, "many others".

The proposed 1989 Work Plan takes note of this report, and suggests considering some of the above crops for consideration of expanded long-term research: all of the springboard products except strawberries, both general market priority crops, and two targeted market opportunities: cucumber, papaya. Also mentioned were several crops not among the 18: capsicum, passion fruit and durian. Not considered were: strawberries, mushrooms and orchids, tomatoes, carnations, cashews, ginger, and garlic.

Selection of crop priorities has rightly been consultative, supported by a formal analysis of domestic factors and a very different analysis of foreign and domestic market factors. The result of these consultations has been a gradual broadening of the focus of the project from 11 crops in 1986 to 21 crops in 1989 (with 10 other crops under consideration). This is a sensible and appropriate development, but it needs to be supported by a more comprehensive policy analysis, as well as more comprehensive and carefully-measured farm level data.

ANNEX 8

New Subsidiary Food Crops Varieties Awaiting Release

ANNEX 8

New Subsidiary Food Crops Varieties Awaiting Release ¹

<u>Priority</u>	<u>Crop</u>	<u>Variety</u>	<u>Remarks</u>
1.	Cowpea	Arlington MI 1 Cowpea MI 35 Cowpea	Outstanding Very good results. Substitute for dhal
		TVX 930 - 1B (IITA)	
	Greengram	MI - 4 MI - 5 Type 77	Outstanding
2.	Chilli	M - 1	Form the back bone of the chilli industry
		M - 2	Seed non-uniformity is a problem
	Onion		Research limited to evaluation of lines
	Blackgram	MI 1	Very promising
	Sesame	MI 1	Black seeded.
		MI 3	Recommended variety White seeded. Recommended variety
	Pigeon pea		
	Garlic		
3.	Maize	Comp 6 Across 7843 Across 7929 Poza Rica	White seeded High in lysine and tryptophane
		Across 8140 Poza Rica 7931	Early maturing

Note : ¹ Compiled from data available at DARP office

New Subsidiary Food Crops Varieties Awaiting Release (continued)

<u>Priority</u>	<u>Crop</u>	<u>Variety</u>	<u>Remarks</u>
	Groundnut	X - 14, No. 45	
	Soybean	PM 78-13 PM 78-25 PB 1	Introduced. Very good results
		Improved Pelican	Introduced. Very good results
		Bossier	Introduced. Very good results
4.	Potato	Krushu Seetha Desiree	Late, blight resistant Late, blight resistant Open pollinated. Possible to raise viable seed
	Manioc	CARI - 526 CMC - 84 CARI - 555 MU - 51	Released for cultivation Released for cultivation
	Sweet Potato	CARI - 9 C - 26 CARI - 242 CARI - 273 Cinchi	Released for cultivation Released for cultivation
	Finger Millet	CO - 10 JNR 3B - 1008 HPB 83 - 4	Promising variety for the Dry Zone Promising variety for the Dry Zone Promising variety for the Dry Zone
	Sorghum		
	Sun flower	Spain 253416 Turkey 15-1993	Promising variety Promising variety
5.	Horse gram Beans (iry) Field pea Winged bean		

1

New Subsidiary Food Crops Varieties Awaiting Release (continued)

<u>Priority</u>	<u>Crop</u>	<u>Variety</u>	<u>Remarks</u>
<u>Other Vegetable Crops :</u>			
	Okra	MI - 5	Indigenous improved quality resistant to mosaic virus
		MI - 7	Indigenous improved quality resistant to mosaic virus
	Brinjal	Jaffna Long Jaffna Purple	
	Vegetable Cowpea	Hawari Me Polon Me Murunga Me Bushitao	
	Cabbage	Lanka Gova	Small headed. Produced viable seed under local conditions
	Carrot	Renita	
	Radish	Japanese ball	Produced seed under local conditions
	Tomato	T 146	Wilt resistant. Tolerant of bacterial wilt
		T 89	Wilt resistant. Tolerant of bacterial wilt

Variety Release Process :

The present variety release process used by MAFC is perceived by some as long, protracted and even tortuous exercise. This is how it works :

Once a promising cultivator is identified by research as superior to the currently-released varieties, it undergoes scrutiny by the nationally co-ordinated varietal trials (CVT) by testing it at different locations. If it stands the test, it is subjected to the Varietal Adaptability Tests (VAT), a co-operative process with the Extension Division. This testing is done on farmers fields. If still

in the running, the variety is submitted for the review of the National Seeds and Planting Materials Committee (NSPMC) a body appointed by the Minister of Agriculture, Food and Co-operatives who solicits recommendations from the Varietal Release Sub-Committee and the Seed Standards Sub-Committee. The last mentioned Committee has never functioned.

The Varietal Release Sub-Committee bases its approval on the recommendations of the Research Division and data provided by VAT, based on data from both on- and off-station research. The Seed Certification Service has added a relatively new requirement called the DUS test (Distinct, uniform and stable). No variety can be released without the DUS test certificate.

Annex 9

Technical Assistance Provided and Planned

Annex 9

Technical Assistance Provided and Planned

DIVERSIFIED AGRICULTURAL RESEARCH

Table 9-1.: Short-term Technical Assistance, February 1989

Provider	Budget (Person Months)	Provided Months)	Balance
DAI	56	27.75	28.25
OSU	19	6.25	12.75
IIE	4	1.50	not needed
TOTAL	79	35.50	41.00

DIVERSIFIED AGRICULTURAL RESEARCH

Table 9-2.: Technical Assistance Provided and Planned, April 1989

A. Long-Term

<u>Specialization</u>	<u>Name</u>	<u>Affiliation</u>	<u>Termination</u>	<u>PM</u>
Chief of Party	G.W. Selleck	DAI	Apr. 1, 1990	54.0
Seed Specialist	G.A. Reusche	DAI	Nov. 15, 1989	38.5
Plant Breeder	J.L. Tikoo	DAI	Aug. 10, 1989	12.0
Research Agronomist	R.A. Morris	OSU	Assignment Completed	24.5
Soil/Water Mgmt. Specialist	D.W. Henderson	DAI	Oct. 8, 1989	18.0
Agricultural Economist	L.A. Navarro	OSU	Assignment completed	24.0
Training Co-ordinator	S. Dissanayake	IITA	August 1991	

B. Short-Term

Start-up	J. Wolf	DAI	Oct-Nov. 1985	1.75
Computer Mgmt.	Jerry Van Sant	DAI	Feb. 6-27, 1986	0.75
Seed Specialist	C. Claasen	DAI	Feb 17-May 17, 1986	3.00
Seed Specialist	C. Claasen	DAI	Aug 12-Oct 31, 1986	2.50
Integ Pest Mgmt.	J. Alex	DAI	Mar 4-Apr 31, 1986	2.00
Extension	D. Haws	DAI	Sept 30, 1986-Feb 1987	4.50
FSRE	Gladys Nott	DAI	Sept 6-Dec 86	3.50
Baseline Survey	Robin Erickson	DAI	Oct 29, 1985-Mar 1986	4.50
Admin. Management	D. Mickelwait	DAI	Sept, 1987	0.25
Plant Breeder	J.L. Tickoo	DAI	1986 - 1988	6.00
Training	T. Cussack	OSU	Nov 16-22, 1985	0.25

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Technical Assistance Provided and Planned, April 1989 (continued)

<u>Specialization</u>	<u>Name</u>	<u>Affiliation</u>	<u>Termination</u>	<u>PM</u>
Training	Norman Goodman	IIE	Nov 17-Dec 13, 1986	1.00
Seeds Workshop	Gladys Nott	DAI	Jan 8-Mar 16, 1987	2.50
Seeds Workshop Economist	W. Couvillon	DAI	1987	0.75
Baseline Economist	Robin Erickson	DAI	May 11-Oct 1987	5.75
Seeds	H. Youngberg	OSU	Apr 26-May 11, 1985	0.50
Agronomist	R.A. Morris	OSU	Aug 9-24, 1986	0.50
Seeds Workshop	G.S. Wollmer	OSU	Jan-Feb, 1986	0.50
Economics	L.A. Navarro	OSU	1986 - 1988	3.0
Horticulturist	Weiser	OSU	1986 - 1988	0.75
Soils	Warkentin	OSU	1986 - 1988	1.00
Training	Norman Goodman	IIE	Nov 17-Dec 13, 1985	1.00
Training	Heyduk	IIE	1985 - 1986	0.25
Agronomist	Walter Fernando	RDC	May 1-Aug 23, 1986	4.00
Agri. Economist	Abeygunawardena	RDC	Feb - Apr 1987	3.50
Economist	S.M.M. Zohair	RDC	Mon - Sept, 1987	7.00
Economics	Surveyors (14)	RDC	1968 - 1988	36.40
Seeds	Dharmasena	RDC	1968 - 1988	6.00
Seeds	Dinatissa	RDC	1968 - 1988	6.00
Agro-Meteorologist	Ian Stewart	AID Central Fund	May 5-Oct 2 1987	2.00
Economist	Jane Gleason	AID Central Fund	May 22 1987 Mar, 1988	10.00
Microbiologist	R. Davis	AID Central Fund	Oct 1985 - Feb 1989	2.50
Media Specialist	H. Ray	AID Central Fund	Oct 1985 - Feb 1989	0.75

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Technical Assistance Provided and Planned, April 1989 (continued)

<u>Specialization</u>	<u>Name</u>	<u>Affiliation</u>	<u>Termination</u>	<u>PM</u>
Agro-Meteorologist	Ian Stewart	AID Central Fund	May 5-Oct 2 1987	2.00
Microbiologist	R. Davis	AID Central Fund	Planned	5.50
Media Specialist	H. Ray	AID Central Fund	Planned	5.5
Response Farming	Ian Stewart	AID Central Fund	In Progress	2.00
Extension	Violet Malone	DAI	In Progress	2.00
Horticulture	M.L. Panditha	DAI	Approved, not yet filled	3.00
Seed Technology	W. Couvillion	DAI	Approved, not yet filled	3.00
Seed Technology	G. Reusche	DAI	Under Consideration	3.00
Soil/Water Management	D. Henderson	DAI	Approved to Start Aug - Sept 1989	2.00
Ext. Irrigation Specialist	Jim Wolf	DAI	Assignment completed	2.00
Policy Analysis	Expert to be identified	DAI	--	2.00
Market Intelligence	Expert to be identified	DAI	--	2.00
Computer Workshop	Two Trainees from Oklahoma State University	DAI	--	2.00
Management Specialists	Planned Decision Pending	DAI	--	2.00 (?)
Agronomists/Dryland	D. Pool	DAI	Approved to start Aug, 1989	5.5
Extension/Training	Expert to be identified	DAI	Approved	2.4

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ANNEX 10

Current Status of DARP Budget

ANNEX 10

Current Status of DARP

PROJECT BUDGET (\$ 000)

(USAID Funds)

<u>Item</u>	<u>Revised LOP Total</u>	<u>Accrued Expenditure as of 03/31/89</u>
Loan :		
Commodities	2,275	523
Facilities	1,000	174
Seed Restricting Funds-	225	-
	-----	-----
Total	3,500	697
	=====	=====
Grant :		
<u>DAI Contract*</u> :		
Technical Assistance	3,709	2,877
Training	3,281	1,541
Socio Economic Research	320	110
Special Project Fund	60	-
Discretionary Fund	30	-
<u>Other :</u>		
Central Project Cost Sharing	200	34
Evaluation	300	22
	-----	-----
Total	7,900	4,584
	=====	=====

* Revised DAI Contract Budget :

Technical Assistance	3,316
Training	3,281
Socio Economic Research	320
Special Project Fund	60
Discretionary Fund	30

	7,007
	=====

Data Supplied by USAID, May 3, 1989

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GSL Counterpart Funds for DARP

G.S.L. INPUTS FOR THE PERIOD 31-12-1988

Item	Planned L.O.P. Rs. (M)	Budget for 1988 Rs. (M) (GSL Inputs)	Actual Exp. to date in 1988. Rs. (M)	Actual Exp. Quarter ended 31.12.88	Actual Exp. as at- 31.12.87 Rs. (M)	Total Exp. to date 4+6 Rs. (M)	Remarks
	2	3	4	5	6	7	
Technical Assistance	4.49	-	.312	.05	.642	.954	Under this item Office accommodation etc. provided for consultants are costed at U.S. \$ 200 per person per month and is shown as expenditure.
Training	.46	.04	-	-	.035	.035	
Commodities (clearance, storage, inland transport, etc.)	1.24	*4.22	1.131	.453	*4.799	5.93	
Facilities	9.68	4.5	3.37	2.5	.848	4.218	
Personnel	67.63	5.2	2.625	.555	6.921	9.546	
Operational & Maintenance	55.48	4.0	1.71	.89	2.922	4.632	
Evaluation	.34	-	-	-	-	-	No provision has been made for evaluation in 1988.
	<u>139.32</u>	<u>17.96</u>	<u>9.148</u>	<u>4.448</u>	<u>16.167</u>	<u>25.315</u>	

* These figures include harbour charges & duty.

Data Supplied by DDA, May 4, 1989

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ANNEX 11

Persons and Places Visited

ANNEX 11

Persons and Places Visited

USAID, Colombo

1. Peter J. Bloom Mission Director
USAID/Colombo
2. George Peters Assistant Mission Director
USAID/Colombo
3. John B. Flynn Chief
USAID/AGR
4. Charles L. Strickland ADO
Co-Project Manager, DARP
USAID/AGR
5. S.H. Charles Co-Project Manager, DARP
USAID/AGR
6. Jan P. Emmert Evaluation Officer
7. Allison Brown Ag-Project Officer

DARP/DAI, Peradeniya

1. G.W. Selleck Chief of Party
2. Richard Morris Agronomist
3. Gary Reusche Seed Specialist
4. Del Henderson Land & Water Management-Specialist
5. J. Ian Stewart Short-term Specialist, Agro-Climatology
6. Jane Gleason Short-term Specialist-Soybeans
7. J.L. Tickoo Legume Breeder
8. James M. Wolf Short-term Specialist-Irrigation
9. Violet Malone Short-term Specialist-Extension
10. Ross Lubigan Short-term Specialist-Weed Management

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Persons and Places Visited (continued)

DARP/IIE

1. Shayamalie Dissanayake Training Co-ordinator

MARD/DAI, Pimburattawa

1. Max Goldensohn Chief of Party, Pimburettewa
2. Carl Hittle Agronomist
3. Honorio B. Bautista Farm Organization Specialist

MAFC/DOA, Peradeniya and Ganoruwa

1. S.D.I.E. Gunawardena Director/DOA
2. Edward Suraweera DD/Agricultural Economics & Projects
3. A.R.M. Mahroof AO/Agricultural Economics & Projects
4. H.B. Herath Additional DD/Education & Training
5. A.M. de Mel DD/Education & Training
6. M.D. Samarasinghe DD/Seeds
7. S.P.R. Weerasinghe Acting DD/Research & Head Planning Cell
8. S. Amarasiri ADD Research
9. Sarath L. Weerasena DD/Seed Certification Service
10. W.D. Albert DD/Seed Certification Service
11. S. Wirasinghe DD/Agricultural Extension
12. A.M. Abeyratne Chief Accountant, Peradeniya
13. M.H.J.P. Fernando DD/Research
14. L.S.S. Jayasundera SE/Civil
15. M.A. Wimal AE-Headquarters
16. Mervyn Sikurajpathy Head Soybean Food Research Center

Persons and Places Visited (continued)

MAFC/DOA, Peradeniya and Ganoruwa

17. K.A. Ranaweera AD/Seeds, Peradeniya
18. G. Jayawardena Head/Plant Genetics Resources Center
19. M.E.R. Pinto Ag DDA Horticulture/Peradeniya
20. S.B. Rajapakse DD/Administration
21. D.B. Sumithraarachchi Dir/Royal Botanic Gardens, Peradeniya
22. S. Somasiri Head/Land and Water Use Division,
Peradeniya
23. Nihal Attapatu Marketing Economist
Agricultural Economies and Projects
24. A.A.B. Hafi Agricultural Economist
Agricultural Economies and Projects
25. G. Balasuriya Agricultural Economist
Agricultural Economies and Projects
26. D.M.R. Rupasinghe ADA/Agricultural Extensions

MAFC/DOA Field Staff

1. F. Hewavitharana Research Officer
Soybean Food Research Institute
2. P. Gunasekera A.O., Audio-visual Center
3. R.R.A. Wijekoon S.M.S., Audio-visual Center
4. Palitha Edirisighe S.M.S., Audio-visual Center
5. C.B. Hindagala Research Officer
Plant Genetics Resources Center
6. H. Somapala Regional DD/R
Regional REsearch St. Makandura
7. S. Waththukeera A.D.A. Training, Makandura
8. M. Attanayake A.O. Training, Makandura

Persons and Places Visited (continued)

MAFC/DOA Field Staff

- | | |
|-----------------------|------------------------------------|
| 9. P.B. Rambukwella | A.D.A./Seeds, Pelwehera |
| 10. R.M. Dharamadasa | FM/Government Seed Farm, Pelwehera |
| 11. Ariyaratna | DD/Res, Maha Illuppallama |
| 12. L.L. Ranasinghe | RO/Aralaganwila |
| 13. Y. Ketipearachchi | RO/Entomologist, Aralaganwila |
| 14. Ajantha De Silva | RO/Water Management , Aralaganwila |
| 15. V. Yogaratnam | DD/Res, Bandarawela |
| 16. Kalyanagoda | Plant Pathologist/Bandarawela |
| 17. K. Devasabaj | RO/Potato, Bandarawela |
| 18. Saranda Abeyratna | Bandarawela |
| 19. H.M. Ariyarathna | Ag Res Center, Bandarawela |

RDC

- | | |
|--------------------|--|
| 1. Trevor Bemunuge | Short-term Consultant
Computer Programming & Accounting |
|--------------------|--|

MEA/EIDD

- | | |
|----------------------|-----------------------------|
| 1. Sunil Amarasinghe | Manager, Market Development |
|----------------------|-----------------------------|

PGIA/University of Peradeniya

- | | |
|----------------------|--|
| 1. H.P.M. Gunasena | Dean, Faculty of Agriculture
Prof. Crop Science
University of Peradeniya |
| 2. Y.D.A. Senanayake | Director, Postgraduate Institute of
Agriculture
Prof. Crop Science
University of Peradeniya |

Persons and Places Visited (continued)

PGIA/University of Peradeniya

3. Visited Maha Illuppallama Unit
(for first year practicals, BSc)
4. Representatives of Returned Scholars, Long-term, Short-term
5. Representatives of Agricultural Graduate Association

Representatives of Other Donor and International Organizations

1. Manfred Guntz Chief of Party
German Supported Project, GTZ
Farm Mechanization Centre (FMRC)
Maha Illuppallama RRC
2. Peter J. Lengowski Engineering Technician, GTZ Team
Farm Mechanization Centre (FMRC)
Maha Illuppallama RRC
3. Dyan Kirtisinghe Project Manager
Sri Lanka Agricultural Research Project
(ARP), (Supported by World Bank)
4. Roberto L. Lenton Director General
International Irrigation Management
Institute (IIMI)
5. Senor Miranda Senior Irrigation Specialist
International Irrigation Management
Institute (IIMI)

Other Organizations

1. V. Manoharan Secretary, Seedmens Association
Sri Lanka, Colombo
2. Arjuna Hulugalle Multi-Packs (Ceylon) Ltd.
Colombo

Persons and Places Visited (continued)

MAFC/GSL

1. D.T. Wettasinghe Executive Secretary
Sri Lanka Council for Agricultural
Research Policy (CARP), (Supported by GTZ
and World Bank)

2. E. Kanendran Deputy Director
National Planning Unit
Ministry of Policy Planning and
Implementation

3. Munasinghe Galpothage Employment, Investment and Enterprise
Development Division
Mahaweli Economic Agency
Mahaweli Authority of Sri Lanka

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Bibliography

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