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PD-AAD-083-B

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
Washington, D.C. 20523

PROJECT PAPER

Proposal and Recommendations  
For the Review of the  
Bilateral Assistance Subcommittee

SRI LANKA - AGRICULTURAL EDUCATION DEVELOPMENT

AID/BAS-029

UNCLASSIFIED

124

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON, D.C. 20523

UNCLASSIFIED  
AID/BAS-029  
July 25, 1978

MEMORANDUM FOR THE BILATERAL ASSISTANCE SUBCOMMITTEE

SUBJECT: Sri Lanka - Agricultural Education Development

Attached for your review are recommendations for authorization of a grant to the Government of Sri Lanka (the "Cooperating Country") in an amount not to exceed Six Million United States Dollars (\$6,000,000) to help in financing certain foreign exchange and local currency costs of goods and services required for the project.

No meeting has been scheduled for this grant proposal; however, your concurrence or objection is requested by close of business on Wednesday, August 2, 1978. If you are a voting member, a poll sheet has been enclosed for your response.

Working Group on Bilateral Assistance  
Office of Policy Development and Program  
Review

Attachments:

Summary and Recommendations  
Project Analysis  
Appendix A & B

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AGENCY FOR INTERNATIONAL DEVELOPMENT

**PROJECT PAPER FACESHEET**

1. TRANSACTION CODE  
 A = ADD  
 C = CHANGE  
 D = DELETE

2. DOCUMENT CODE  
**PP**  
**3**

3. COUNTRY/ENTITY  
**SRI LANKA**

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 digits)  
 **383-0049**

6. BUREAU/OFFICE  
 A. SYMBOL **ASIA** B. CODE  **04**

7. PROJECT TITLE (Maximum 40 characters)  
 **AGRICULTURAL EDUCATION DEVELOPMENT**

8. ESTIMATED FY OF PROJECT COMPLETION  
 FY  **85**

9. ESTIMATED DATE OF OBLIGATION  
 A. INITIAL FY  **78**  B. QUARTER  **3**  
 C. FINAL FY  **78**  (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$1 - )

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	2,957	43	3,000	5,914	86	6,000
(GRANT)	(2,957)	(43)	(3,000)	(5,914)	(86)	(6,000)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S.	1. 2.					
HOST COUNTRY		222	222		3,114	3,114
OTHER DONOR(S)	0		0	1,213		1,213
TOTALS	2,957	265	3,222	7,127	3,200	10,327

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)

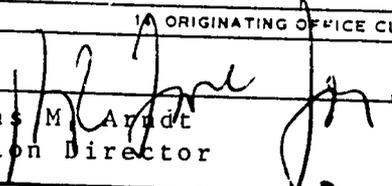
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY <u>79</u>		K. 3RD FY <u>   </u>	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) EH	600	631		3,000		3,000			
(2)									
(3)									
(4)									
TOTALS				3,000		3,000			

A. APPROPRIATION	N. 4TH FY <u>   </u>		O. 5TH FY <u>   </u>		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED
	P. GRANT	Q. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1) EH					6,000		<input type="checkbox"/> MM <input type="checkbox"/> YY <input type="checkbox"/> 18 <input type="checkbox"/> 80
(2)							
(3)							
(4)							
TOTALS					6,000		

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA. BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 = NO  
 2 = YES

ORIGINATING OFFICE CLEARANCE

SIGNATURE: 

TITLE: **Thomas M. Arndt**  
**Mission Director**

DATE SIGNED:  06  02  78

15. DATE DOCUMENT RECEIVED IN AID W. OR FOR AID. W. DOCUMENTS. DATE OF DISTRIBUTION:  06  28  78

AGENCY FOR INTERNATIONAL DEVELOPMENT  <b>PROJECT PAPER FACESHEET</b>	1. TRANSACTION CODE <div style="border: 1px solid black; display: inline-block; padding: 2px;">A</div> A ADD C CHANGE O DELETE	PP  2. DOCUMENT CODE  3
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3. COUNTRY/ENTITY <b>SRI LANKA</b>	4. DOCUMENT REVISION NUMBER <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>
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5. PROJECT NUMBER (7 digits) <div style="border: 1px solid black; padding: 2px;">383-0049</div>	6. BUREAU/OFFICE A. SYMBOL <b>ASIA</b>	B. CODE <div style="border: 1px solid black; padding: 2px;">04</div>	7. PROJECT TITLE (Maximum 40 characters) <div style="border: 1px solid black; padding: 2px;">AGRICULTURAL EDUCATION DEVELOPMENT</div>
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8. ESTIMATED FY OF PROJECT COMPLETION  FY <div style="border: 1px solid black; padding: 2px;">8/5</div>	9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY <div style="border: 1px solid black; padding: 2px;">7/8</div> C. FINAL FY <div style="border: 1px solid black; padding: 2px;">7/8</div> B. QUARTER <div style="border: 1px solid black; padding: 2px;">4</div> <small>(Enter 1, 2, 3, or 4)</small>
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10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) - Rs.16						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	0		0	6000		6000
(GRANT)	( )	( )	( )	( )	( )	( )
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S.	1.					
	2.					
HOST COUNTRY		222	222		3114	3114
OTHER DONOR(S)	0		0	1213		1213
<b>TOTALS</b>	<b>0</b>	<b>222</b>	<b>222</b>	<b>7213</b>	<b>3114</b>	<b>10327</b>

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) EH	600	631		6000					
(2)									
(3)									
(4)									
<b>TOTALS</b>									

A. APPROPRIATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		12. IN-DEPTH EVAL. UATION SCHEDULED
	Q. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1)					6000		<div style="border: 1px solid black; padding: 5px; display: inline-block;">           MM YY            18 8 b         </div>
(2)							
(3)							
(4)							
<b>TOTALS</b>							

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

14. ORIGINATING OFFICE CLEARANCE SIGNATURE TITLE <b>Thomas M. Arndt Mission Director</b>	15. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION  DATE SIGNED <div style="border: 1px solid black; display: inline-block; padding: 2px;">           MM DD YY            0 6 0 2 7 8         </div>
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Appendix A:

1. Statutory Criteria Checklist
2. Draft Authorization
3. Cooperating Country Request
4. PID Approval Cable

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Academy for Educational Development, Inc.- Postgraduate  
Institute of Agriculture, University of Sri Lanka - A  
Preliminary Assessment - December 1977 (Available in ASIA/TR)

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**PART I PROJECT SUMMARY AND RECOMMENDATIONS**

- A. Grantee: Government of Sri Lanka
- B. Implementing Agency: Post Graduate Institute of Agriculture
- C. Recommendation:

1. AID Contribution:  
Grant in FY 78 of \$ 6,000,000
2. Borrowers Contribution:  
Rupees 49,816,000 = \$ 3,113,500 @ Rs.16 = \$1
3. Other Donor Contributions (Est. cost) = \$ 1,213,000

Total Project Cost = \$ 10,326,500  
GSL Contribution = 30%

D. Description of Project:

The project will provide long and short term technical assistance, long term training, and equipment and materials to the Faculty of Agriculture in the University of Sri Lanka, Peradeniya Campus and to the Post Graduate Institute of Agriculture over a seven year period in order to achieve the project purpose of doubling the annual number of indigenously trained B.Sc. graduates and tripling the annual number of indigenously trained post graduates by 1985. Under the project Faculty professional staff, primarily new hire, will be trained to Ph.D. level through a combination of study in the United States (and other countries with funds from other donors) and research in Sri Lanka. Expatriate Faculty will be provided during the absence of local staff to teach courses and assist in developing curriculum, and establishing and overseeing research in Sri Lanka carried out by Ph.D. candidates. Equipment and materials will be provided under the grant for existing and new facilities to be financed by the GSL and constructed under the project. Other donors are expected to fund a portion of the training and visiting professors planned for the project.

E. Summary Findings:

Additional trained personnel are needed in Sri Lanka to plan and implement programs to develop the agricultural potential of the country. While additional skilled personnel are needed at all levels the need for more B.Sc. and advanced degree graduates is particularly acute. Such graduates readily find employment and no pool of unemployed graduates exist. Existing capacity to train graduates is minimal and does not meet identified demand. This capacity is limited to the Faculty of Agriculture at the University of Sri Lanka, Peradeniya Campus which produces approx-

imately 100 B.Sc. graduates a year and the recently formed Post Graduate Institute of Agriculture also at Peradeniya which utilizes faculty staff and the part time services of government or private sector employees to instruct a few graduate students.

Significant expansion of these institutions is necessary to meet the demand for trained personnel. The alternative of continued training abroad in Agriculture is not only more costly in the long run but the training so provided often lacks relevance to Sri Lanka.

The number of qualified potential (and actual) applicants for degree and advanced degree programs in Agriculture exceeds the number that could be admitted as these institutions expand during the project.

An expansion of trained people at the B.Sc. and advanced degree levels is directly relevant to and beneficial for the poor in Sri Lanka where the bulk of the poor are on agricultural land, the majority of land is in small holdings, agriculture figures prominently in the economy, and where development has emphasized equity.

The project as designed is technically sound. Training is designed to minimize time outside Sri Lanka and maximize training and research relevance to Sri Lanka. Training of Faculty staff is justified by the need for doctoral staff in an institution which is to grant Ph.D's and by the minimal incremental training necessary to gain a Ph.D. as opposed to a Master's degree which would include a research project. Visiting staff are required not only to teach courses for which staff are inadequate but to participate in curriculum development and particularly to oversee research of staff in training.

Development of the institutions themselves is designed to enhance the relevance of the institutions to small farmer needs through demonstration farms, direct interaction with selected villages, and audio/visual outreach capacity.

The project is designed to permit significant participation by other donors both in the provision of expatriate staff and the training of Faculty. Assistance in these areas has historically come from a variety of donors although at less than adequate levels. Discussions to increase such assistance are at an advanced level with at least one major donor. Participation by other donors coupled with U.S. training and staff from several institutions as planned will help insure a broad institutional base and avoid parochialism.

If increased assistance from other donors is not forthcoming as expected the project would still be viable but fewer degrees would be granted than planned.

The institutional expansion planned under the project will require a significant expansion of the administrative units of the institutions as well as a doubling of their finances. The need for enhanced administration is recognized by the GSL and included as a covenant

for the grant agreement. Increased funding requirements are in line with recent trends in funding, have the support of the GSL, are included in the GSL contribution, and are included in the standard covenant.

The project addresses a priority concern of the GSL and reflects the Faculty's own five year plan for expansion.

Implementation of the U.S. financed portion of the project, involving 38 participants, 28 person years of expatriate assistance divided among as many as 40 people, creation of a library, and a million dollars worth of primarily inexpensive equipment, will necessitate the addition in FY 79 of at least one full time AID staff member in Sri Lanka to be project manager. A spar for this position is being drafted by the Mission. The position fits within the USDH ceiling approved by the Ambassador for FY 79.

The environmental implications of this project are limited to the few new buildings to be financed by the GSL. The project provides ample scope for the participation of women as noted in the body of the paper. It meets all applicable statutory criteria.

#### F. Project Development Team:

The basic concept of this project was developed by Dr R.R. Appadurai who until his death earlier this year, was the Dean of the Faculty of Agriculture. If, as the Mission plans, this project is funded and successfully implemented much of the credit belongs to Dr Appadurai who had the vision to understand and the energy to pursue what is needed for higher agricultural education in Sri Lanka.

The PID for the project was written by Chuck Antholt then on TDY from AID/W. A team of eight, led by Dr Howard E. Ray under the auspices of the Academy for Educational Development performed a major assessment of the Post Graduate Institute in the fall of 1977 with the assistance of Chuck Antholt. The findings in their report "A Preliminary Assessment" along with the conclusions reached by the Faculty were largely responsible for broadening the project to focus on the needs of undergraduate as well as graduate training.

Final project analysis and design and particularly a detailed implementation plan were done by the Faculty of Agriculture under the Acting Dean, Dr T. Jogaratnam and Dr Clayton Seeley, ASIA/TR on a lengthy TDY in early 1978 with the help of Jeff Evans, USAID. The Project Paper was written by Jeff Evans and Clay Seeley.

#### G. Project Issues:

Three major issues were raised by AID/W during project review: the demand for trained personnel; their relevance to AID's mandate; and the appropriateness of indigenous training versus continued training abroad. These issues were resolved by the AED "Preliminary Assessment" and development of the project paper was subsequently approved by AID/W.

## PART II PROJECT BACKGROUND AND DETAILED DESCRIPTION

### A. BACKGROUND

Agriculture plays a major role in the economy of Sri Lanka through its large contributions to GDP, foreign exchange earnings and government revenues. In 1970, the agricultural sector accounted (at world market prices) for 44% of GDP, and 73% of export earnings, as well as 50% of total employment. The rural population, nearly 80% of the total in 1971, depends almost completely upon agriculture for its livelihood.

Sri Lanka exports about 35% of its agricultural output and imports nearly 50% of its food supply. Consequently, the economy is highly vulnerable to changes in world prices for the three major export crops - tea, rubber and coconut (which in 1970 accounted for approximately 56, 22 and 12 percent of export earnings, respectively). In particular, future market growth prospects for tea, the major export crop, are severely limited.

The population of Sri Lanka was estimated as 13.6 million in 1975, growing at a rate of 1.8 percent annually. Its total land area is about 16 million acres, which in 1970 was utilized approximately as follows:

Tea	597,000
Rubber	569,000
Coconut	1,145,000
Other tree crops	187,000
Rice	1,250,000
Other field crops	<u>503,000</u>
	1
Total cultivated area	4,251,000

The above figures imply a cultivated area of 2.26 acres per average rural family of 5.8 persons. Since the recent land reforms, no private holding can exceed 50 acres. Rice, other food crops, and coconuts are typically smallholder enterprises.

Sri Lanka's food imports amounted in 1970 to 47% of total imports. Although Sri Lanka has invested considerable effort in increasing rice production, and raised domestic production from 44% of total consumption in 1965 to 67% in 1970, rice continues to form the bulk of imports.

In this situation, a priority goal of the government is the achievement of self-sufficiency in rice and other foodstuffs which can be economically grown in the country. The present government has announced plans for major development programs for attaining food self-sufficiency. In particular, the government has announced first priority for accelerating the Mahaveli irrigation scheme to bring approximately 600,000 acres under permanent irrigation.

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1 Source: Dept. of Census and Statistics

2 Source: Ministry of Planning & Employment

3 Source: Customs returns

These plans for accelerated agricultural development imply the necessity for considerable numbers of agriculturally trained personnel for their successful realization.

Recognizing this requirement the Government of Sri Lanka took several steps to assess its depth and to attempt to meet demands. In 1969 a questionnaire was sent to all Government departments or divisions involved with agriculture, inquiring about the classification level, field of specialization, and level of education of their staff. The report presented the above information, made qualitative observations about the adequacy of their skills and qualifications, and discussed which educational institutions could be utilized to provide the necessary upgrading.<sup>4</sup>

Another investigation, this one focusing on demand for high-level manpower in agriculture, was carried out in 1972. Questionnaires were sent to all Government departments, divisions and institutes involved with agriculture, enquiring about post-graduate educational needs for upgrading their present staffs. It was found that post-graduate training was needed immediately for 128 people, all but 4 at the masters level.<sup>5</sup>

It was also known that the university system had produced more graduates than the job market could absorb. However an ILO task force found that "one of the most striking features of the agriculture sector in Ceylon is the shortages of trained manpower, a feature which is something of a paradox in a predominantly agricultural economy characterized by an increasing number of educated unemployed."<sup>6</sup>

It was these and other studies that convinced the GSL to establish in 1975 a Post Graduate Institute of Agriculture (PGIA) to indigenously train advanced degree candidates, and to attempt to expand the enrollment of the Faculty of Agriculture of the University of Sri Lanka at Peradeniya.

The PGIA is an autonomous unit of the University fiscally and administratively although its degrees are granted by the University and its full time professional staff are the University's Faculty of Agriculture. Eighty percent of its courses are taught by external staff, primarily employees of the GSL who are stationed nearby or who travel from Colombo to give lectures. PGIA had admitted 36 master's degree candidates and 13 Ph.D. candidates by the time assistance from AID was requested to expand the institute, upgrade its courses, and reverse the part time/full time teaching ratio.

- 
4. Committee on Manpower Survey in Agriculture, Manpower Survey in Agriculture, Part II: Analysis of Present Situation, Evaluation of Its Adequacy and Quality of Agricultural Training Required (Mimeo, first draft), October 1969, 129 pp.
  5. "Circulated with reference to item 5 - Minutes of the second meeting of the Committee appointed to report on the establishment of a Post-graduate Institute of Agriculture and Animal Husbandry", mimeo, Table I, p.2
  6. ILO, Matching Opportunities and Expectations: a programme of action for Ceylon. Technical Papers (Geneva 1971) p.176.

The Faculty of Agriculture of the University of Sri Lanka was established in 1947. It now consists of six departments and admits 110 students each year for undergraduate study. At the time of the request to assist PGIA the Faculty was preparing its own five year plan to double admissions.

Following receipt of the PGIA request AID financed a 7 person team under the auspices of the Academy for Educational Development to assess the proposed project and particularly to look closely at the supply, demand and relevance of degree education and at alternatives for meeting the demand including the PGIA and Faculty plans. The team identified the need for a project to address both undergraduate and graduate education and confirmed the feasibility and appropriateness of meeting the demands through expansion of the existing institutions. The final project design was prepared on the basis of the AED report, the Faculty five year plan, and subsequent discussions with the staff of each department in the Faculty.

AED findings are provided in the technical analysis. The full report is available from ASIA/TR.

#### B. PROJECT DESCRIPTION

The purpose of this project is to double the annual number of indigenously trained B.Sc graduates and triple the annual number of indigenously trained postgraduates by 1985. Employment of these graduates will contribute to the sector goal of promoting agricultural development that increases domestic food production; expands employment opportunities; and improves the small farmers' level of living. Basic assumptions are that B.Sc. and advanced degree holders will be employed locally in programs, both public and private sector, that contribute to agricultural development; that personnel trained to the B.Sc. and advanced levels are important to agricultural development; and that the agricultural development which does occur will benefit small farmers and the rural poor. The validity of these assumptions is based on the demand for trained personnel ascertained from various studies and experience; the lack of unemployment among existing graduates; the realization that national programs benefit from planning and implementation by people with relevant training; the history of social equity in previous programs; and the equity considerations inherent in planned programs in the rural sector.

The means to achieving this purpose is the expansion of the two indigenous institutions training higher level agricultural personnel - the Post Graduate Institute of Agriculture, and the Faculty of Agriculture at the Peradeniya Campus of the University of Sri Lanka, both of which share a common professional staff and many facilities. The method for attaining this increased capability is hiring and training additional staff; providing expatriate professors both to teach and to supervise the research of staff in training; expanding facilities including library, buildings, and equipment to accommodate increased enrollment; and

and enrolling more students as more staff and facilities become available. Training is designed to maximize time in Sri Lanka and the relevance of the training to Sri Lanka. Trainees would spend two years abroad in coursework, one and a half years in Sri Lanka doing research, and approximately 6 months abroad completing degree requirements. While in Sri Lanka their research would be supervised by a visiting staff member in their specialty.

The responsibility for providing the inputs which would lead to the outputs indicating additional institutional capability are shared between AID, the GSL, and other donors as follows:

A. AID would finance:

1. Approximately 28 person years of technical assistance, primarily visiting faculty both long and short term, through a host country contract with a U.S. institution at an estimated cost of \$ 2,553,240;
2. Ph.D. training for 38 participants at different schools under the same host country contract at an estimated cost of \$ 1,867,894;
3. Equipment and vehicles for the Faculty and PGIA programs at a cost of \$ 1,164,729;
4. Books, material, and equipment for a library at a cost of \$ 375,000; and
5. Miscellaneous expenses of \$ 39,000.

B. Other Donors would finance:

1. Training for 12 Ph.D. candidates at a cost of \$ 544,570; and
2. Technical assistance (visiting Faculty) totaling 84 pm at a cost of \$ 668,732.

C. The GSL would finance:

1. Local operating expenses estimated for the period 1978 - 1985 to be: for PGIA Rs. 7,581,000 (\$ 473,812)  
for the Faculty Rs.27,006,000 (\$1,687,875);
2. Additional on-campus buildings and furniture - Rs.10,151,000 (\$ 634,438);
3. Additional off-campus (demonstration farm) facilities at a cost of Rs.5,078,000 (\$ 317,375); and
4. Existing facilities and equipment the value of which has not been determined or attributed.

The logical framework which follows provides additional detailed information on the project.

LOGICAL FRAMEWORKA. Goal

Agricultural development that: 1) increases domestic food production; 2) expands employment opportunities; 3) improves the small farmers' standard of living.

Measures of Goal Achievement

1. Paddy production
2. Absolute and relative numbers of productively employed people in the agriculture sector
3. Small farmer incomes

Means of Verification

1. Bureau of Census and Statistics data
2. Ministry of Agriculture and Lands data
3. Food import figures
4. Central Bank data

Assumptions

1. B.Sc. and advanced degree holders will be employed in programs that contribute to agricultural development.
2. Personnel trained to B.Sc. level and above are important to agricultural development.
3. Agricultural development will benefit small farmers and the rural poor.

B. Project Purpose

To double the annual number of indigenously trained B.Sc. graduates and triple the annual number of indigenously trained postgraduates by 1985.

Beginning and end of Project Status

Beginning (1977-78)	Measure	End (1985-
414	B.Sc. Candidates enrolled	808
99	B.Sc. Degrees granted	200
26	M.Sc. Candidates enrolled	75
23	M.Sc. Degrees granted	67
10	M.Ph. Candidates enrolled (2 yrs. program)	22
1	M.Ph. Degrees granted	10
2	Ph.D. Candidates enrolled (3 yrs. program)	39
0	Ph.D. Degrees granted	10
20	% courses taught by Faculty	80

Means of Verification

PGIA and University of Sri Lanka records.

Assumptions for Achieving Purpose

Drop out rate continues to be less than 5%  
 Qualified applicants equal or exceed capacity

C. OutputsMagnitude of Outputs

- |  |  |
|--|--|
| <p>1. Trained Faculty in Six Departments</p> | <p>1. Faculty consists of:</p> <p>A. Department of Crop Science:<br/>         14 Ph.D. degree staff<br/>         3 M.S. degree staff</p> <p>B. Department of Agricultural Biology:<br/>         13 Ph.D. degree staff<br/>         4 M.S. degree staff<br/>         1 B.S. degree staff</p> <p>C. Department of Agricultural Chemistry:<br/>         12 Ph.D. degree staff<br/>         2 M.S. degree staff</p> <p>D. Department of Agricultural Economics and Extension Services:<br/>         12 Ph.D. degree staff<br/>         2 M.S. degree staff</p> <p>E. Department of Animal Husbandry:<br/>         13 Ph.D. degree staff<br/>         1 M.S. degree staff</p> <p>F. Department of Agricultural Engineering:<br/>         13 Ph.D. degree staff<br/>         1 M.S. degree staff</p> |
| <p>2. Adequately equipped facilities</p>     | <p>2. Facilities consists of:</p> <p>A. Additional buildings and equipment for:<br/>         1. Agricultural Biology<br/>         2. Agricultural Chemistry<br/>         3. Animal Husbandry<br/>         4. Experimental Farms</p> <p>B. Renovated Buildings for:<br/>         1. Crop Science<br/>         2. Libraries</p> <p>C. Post Graduate Library<br/>         with 18,000 books,<br/>         165 journal subscriptions<br/>         90 back files on filme/fiche<br/>         functioning acquisition and<br/>         cataloging system</p>   |

3. Operating research/outreach programs

3. Programs consists of:

- A. Staffed and equipped farms at Dodangolla and Meewatura
- B. All students have partial training at Farms
- C. Operating research/extension relationship with farm villages
- D. 56 students in graduate research program
- E. All students involved in minor research programs
- F. Research results published and disseminated
- G. Research internally and externally coordinated

4. Curriculum developed and utilized

4. Curriculum developed for the following fields:

- A. Crop Physiology
- B. Genetics and Plant Breeding
- C. Undergraduate and postgraduate Phytopathology
- D. Soil Physics
- E. Soil Microbiology Laboratory Procedures
- F. Rural Sociology
- G. Communications
- H. Rural Community Development
- I. Waste Management Research/Environmental Control
- J. Advanced Water Management
- K. Advanced Quantitative Genetics and Animal Breeding

Means of Verification

Project Reports

Assumptions for Achieving Outputs

- 1. Drop-out rate is less than 10%
- 2. New recruitment as scheduled

D. InputsObjectively Verifiable Indicators

## 1. Technical Assistance

## 1. Expatriate Advisors

## A. AID

1. 43 short term people for total  
of 130 pm

2. 7 long term people for 204 pm  
Cost = \$ 2,553,420

## B. Other Donors

1. 4 long term people for 48 pm  
costs \$ 668,732

## 2. Training-long-term

2. Following staff trained to Ph.D. level  
(not cumulative)

## A. AID

21 by 1983

17 by 1984

Cost = \$ 1,867,894

## B. Other donors

3 by 1983

8 by 1984

1 by 1985

## 3. Commodities, Vehicles and Books

3. AID = \$ 1,539,729

## 4. Local staff salaries and support

4. GSL 1978-1985 = PGIA - Rs.7,581,000  
(\$ 495,437)

Faculty - Rs.27,006,000 (\$ 1,473,812)

## 5. Facilities and Services

## 5. GSL

A. Construction of 7 large buildings  
(78,000 sq.ft) and renovation of 1  
large and 1 small building =  
Rs.10,151,000 (\$ 634,438)

B. Construction of 16 smaller buildings  
(71,465 sq.ft) off campuses and Farm  
preparation = Rs.5,078,000 (\$ 317,375)

### PART III PROJECT ANALYSIS

#### A. Technical Analysis

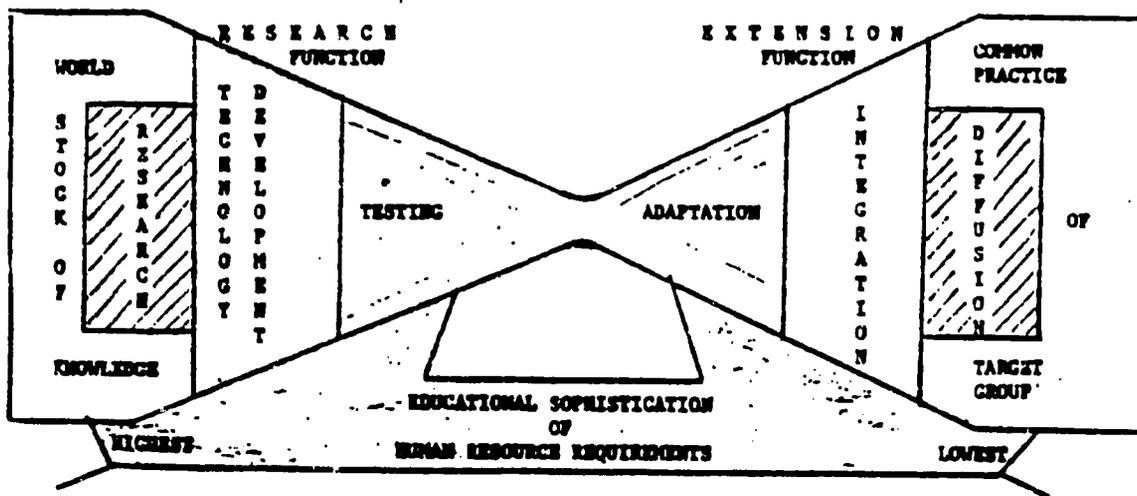
The following technical analysis moves from a discussion of the role of universities in the transfer of technology to an examination of some broad questions underlying the design of the project and to a specific analysis of elements of the project itself. Additional technical analysis may be found in the AED Report.

1. Rationale for the essential role of the University of Sri Lanka Agricultural Faculty and the PGLA in the Innovation/Transfer of Agricultural Technology to Impact on the Rural Poor - by Clayton Seeley.

An indigenous capacity for innovation/transfer of pertinent technology is essential for rural development. Such innovation must respond to or reflect problems of target audiences at various production levels. Technology transfer depends heavily on indigenous research capacity, a lack of which places serious constraints on the ability to adapt knowledge generated elsewhere to local conditions. Likewise, an intermediary organizational/administrative framework which closely ties research to producer needs and motivations is also essential. The pre- or semi-literate poor cannot be expected to change centuries old patterns and beliefs and embrace new technologies and practices by themselves or in isolation. A framework must exist to foster, interpret, and support behavioral change at various levels of interrelated competence and complexity connecting needs with knowledge. Indigenous university competence is essential to this framework and the transfer of technology to the target "poor". Effective assistance to the rural poor must support the total framework.

#### PROCESS OF TECHNOLOGICAL INNOVATION AND APPROXIMATE LEVEL

#### OF CORRESPONDING GENERAL HUMAN RESOURCE TRAINING REQUIREMENTS



Basic Research should be thought of as systematic/organized activity carried out for the specific purposes of adding to the Stock of Knowledge -- identifying and analyzing, applying and evaluating pertinent aspects of it. Technological Development aims to select and synthesize such items from the stock of knowledge into products or processes instrumental to satisfy human wants and needs. The target "poor" simply needs to know how and why to use the technology -- but commodities must be designed and in place before he can use them. A support system framework also must be in place to maintain and refine the technology through time.

Testing the new technology under a variety of conditions is the next integral function of the organizational framework. Adaptation is a further sequential process by which a technology proved for one range of conditions is modified appropriately to fit other conditions. Integration fits a new technology into current practices. It often utilizes a variety of other services and inputs and requires an expertise in the technology as well as the knowledge and understanding of local cultural/ecological conditions. Diffusion delivers information/commodities and instructs on their use, while practice may be regarded as the adoption of the technology into common usage.

When focusing on solving or improving certain human problems or needs, the Research activity searches out tentative development technologies from the store of knowledge, tests them, eliminates alternatives, funnels down the results, and produces a refined product or promising practice. Extension activities then adapt, integrate and diffuse this resultant technology through increasing applications to the target audience until it becomes common practice. Both of these functions receive special attention under this project. Faculty/PGIA present and future programs are detailed in other sections of this paper.

Research and Extension activities are so dependent on each other that they must be located within the same administrative framework. Each piece is related to every other piece and communication among the components flows in both directions. The need for Technological innovation may be identified and initiated at any point within the cycle.

The above is a rather simplistic effort to show basic relationships between the roles of the Faculty/PGIA and Sri Lanka's rural users and intermediary organizations, in the effective application of technological innovation. When such relationships are viewed as a functional whole the essential and very basic role of the University becomes clear. Research/planning/testing/implementation/dissemination/evaluation/research/planning merge in the development cycle or framework.

Each of these ingredients must be present and interacting before much progress in applying technology to behavioral change can take place. In short, one can't expect to improve the indigenous life style of the rural "poor" in a vacuum. An indigenous capacity for innovation/transfer at several levels of sophistication from the University to the local communities is essential for development and the accomplishment of AID objectives focused on the target "poor".

## 2. The Supply and Demand for Trained Agricultural Personnel

A forecast of the supply and demand conditions for high level and skilled workforce in the agriculture sector through 1985 and beyond was conducted by the PGIA and an Academy for Educational Development (AED) team during the period October-December 1977.

Although the study focused on the PGIA, manpower projections were broadened to include middle level, B.Sc., and post-graduate needs in agriculture. Also, due to the many linkages between the PGIA and Faculty of Agriculture, programs and needs of both institutions were included in the investigation. Representatives of the Faculty/PGIA participated in the design of this study, and arranged and were present at all interviews conducted. (The study involves a virtually complete enumeration of public and private sector organizations in Sri Lanka employing agricultural manpower.) Eighty-nine persons representing 66 organizations were interviewed.

A basic assumption used in projecting manpower needs at the various levels was that Sri Lanka development programs will proceed approximately as planned, with no serious disruption due to economic or other causes. On that basis, projections of supply and demand are as described below.

### A. Postgraduate level

The average annual unsatisfied demand through 1982 is expected to include 72 postgraduate degree holders: 59 M.Sc., 5 M.Phil., and 8 Ph.D.

The PGIA is the only Sri Lankan institution which offers post-graduate training in agriculture. To satisfy only 80 percent of the expected demand through 1982, an average of sixty seven students would have to start their postgraduate studies at the PGIA annually throughout the period. The present total of thirty-four entrants in all levels of postgraduate study must be doubled in order to triple the total number of PGIA graduates from 24 to 88 by 1985.

### B. B.Sc. Level

An average "firm" unsatisfied demand of 170 at this level through 1982 was identified. The study also indicates a less firm demand of 75 agricultural high school teachers annually. In addition the Ministry of Plan Implementation has suggested employing an Agriculturist in each electorate district.

The Faculty of Agriculture of the University of Sri Lanka is currently the only agricultural degree-granting institution in the country. Faculty plans to double its intake of students by 1980 should be effected as quickly as staff/facilities can be augmented and the projected 200 annual B.Sc. graduates be reached by 1983. The University Grants Commission is also contemplating extending the Peradenya Faculty influence to include two small regional agriculture campuses. When fully operational these campuses will help meet the B.Sc. demand and provide additional supply for further PGIA/Faculty expansion.

### C. Diploma Level

The average demand for middle level agricultural diploma holders (two years beyond secondary school) through 1982 is projected at 315 per year. A demand for 268 "rural managers" with about the same level of training has also been identified making an average total demand of 601 persons.

Two schools presently offer diploma-level training in Sri Lanka, both of which are planning to expand their enrollements. If these plans materialize, their combined output should average 212 per year over the period -- still leaving a widening gap between supply and expected demand of 389 annually-nearly double the anticipated output. The team was unable to identify any Sri Lankan institutions that presently offer "rural manager" training or any donor agency interested in assisting this area. Such training is not included in this project.

### D. Practical Farm School Level

The average unsatisfied demand at this level (one year beyond secondary school) through 1982 is projected to be 804. In addition, there is a potential demand of up to 1600 annually to serve as agriculture teachers in primary schools. Preliminary plans are to increase the nation's farm schools from 8 to 12 with capacity to graduate a total of 650 persons each year. If these projections are met they will still meet only 80% of the confirmed demand and 27% of the average demand if the need for primary level agriculture teachers are included. The gap

between supply and demand at this level seems certain to continue to widen as major GSL efforts such as the Mahaweli Irrigation project progress. Approximately 455 practical farm level graduates will be needed each year for this project alone. This training is also not included in this project.

#### E. Employment Opportunities and Incentives

Staff stability is quite high in the agricultural sector, and the drift to non-agricultural professions is low. Thus it appears that salaries and other conditions of employment and opportunities for advancement in the public agricultural sector are competitive with those in other public organizations. In contrast to several other professions, unemployment of agriculturally trained manpower appears to be negligible.

The percentage of postgraduate degree holders in agriculture who defect to go abroad or to non-agricultural work is relatively low (10 - 11 percent). The effect is more serious than implied by the numbers, however, because high level agricultural manpower is stretched very thinly.

#### F. Supply

Expanding the capacity to train under-graduates and graduates would be a fruitless exercise if qualified candidates to fill additional capacity were not available. In fact such candidates are readily available. At the graduate level much of the demand comes from employees identified by GSL organizations as needing additional training. This demand alone exceeds existing capacity. There is also considerable demand evident from the university graduates who seek additional training but cannot be accommodated, as well as a "hidden" demand on the part of those who now go abroad for training and a portion of whom would likely remain in Sri Lanka for post-graduate studies if a quality recognized degree were available.

At the undergraduate level applications from those trained in the sciences exceed the Faculty's capacity by approximately ten fold.

AGRICULTURAL MANPOWER SUPPLY/DEMAND - SRI LANKA

12/15/77

	1978	1979	1980	1981	1982	Total	Yearly Average
<b>POST GRAD. - Demand</b>							
M.Sc. (1) yr. study	57	51	56	61	70	295	(59)
M. Phil. (2) yr.	5	10	4	3	4	26	(5)
Ph.D. (3) yr.	4	6	10	7	12	39	(8)
Total Post Grad.	<u>66</u>	<u>67</u>	<u>70</u>	<u>71</u>	<u>86</u>	<u>360</u>	<u>(72)</u>
<hr/>							
B.Sc. - Ag. Sector - Demand	220	185	169	147	131	852	(170)
High School Teachers	75	75	75	75	75	375	(75)
Ag. Specialist - each electorate	50	50	40	10	5	155	(31)
Total B.Sc. Ag.	<u>345</u>	<u>310</u>	<u>284</u>	<u>232</u>	<u>211</u>	<u>1,382</u>	<u>(276)</u>
Anticipated Graduates based on present enrollments	99	106	107	108	117	537	(107)
Gap/Deficit	<u>246</u>	<u>204</u>	<u>177</u>	<u>124</u>	<u>94</u>	<u>845</u>	<u>(169)</u>
<hr/>							
Ag. Diploma Holders - Demand							
2 yrs. beyond High School (Grade 10)							
Demand-Industry	416	328	312	278	243	1,577	(315)
Rural Managers/Service	433	223	238	258	278	1,430	(286)
	<u>849</u>	<u>551</u>	<u>550</u>	<u>536</u>	<u>521</u>	<u>3,007</u>	<u>(601)</u>
Projected Graduates (8.5% dropout)	147	213	213	243	243	1,059	(212)
Gap/Deficit	<u>702</u>	<u>338</u>	<u>337</u>	<u>293</u>	<u>278</u>	<u>1,948</u>	<u>(389)</u>

AGRICULTURAL MANPOWER SUPPLY/DEMAND - SRI LANKA

12/15/77 -- Page 2

	1978	1979	1980	1981	1982	Total	Yearly Average
<b>PRACTICAL FARM SCHOOL GRADUATES - Demand</b>							
1 yr. beyond High School							
Demand-Industry	561	819	1,038	799	805	4,022	(804)*
Ag. Primary Schools	<u>1,600</u>	<u>1,600</u>	<u>1,600</u>	<u>1,600</u>	<u>1,600</u>	<u>8,000</u>	<u>(1,600)</u>
	2,161	2,419	2,638	2,399	2,405	12,022	(2,404)
Projected grads. from 12 Farm Schools	650	650	650	650	650	3,250	(650)
Gap/Deficit	<u>1,511</u>	<u>1,769</u>	<u>1,988</u>	<u>1,749</u>	<u>1,755</u>	<u>8,772</u>	<u>(1,754)</u>

\* (455 annually needed by AID assisted Mahaweli Irrigation Project.)

SOURCE: PGIA/AID AGRICULTURE MANPOWER SURVEY - December 1977  
Academy for Educational Development

### 3. Alternatives for Meeting the Demand For Trained Personnel in Agriculture (Based on AED Report)

Results of the manpower study indicate that Sri Lanka will have a continuing demand for personnel trained at the postgraduate level to service its development programs in the agricultural sector. Before taking the decision to strengthen the PGIA to enable it to meet the major portion of that demand, however, various alternatives were considered. In this regard, qualitative as well as economic implications associated with each alternative were examined.

From its assessment of the demand in relation to the potential capacity of the PGIA, the AED team concluded that it would be neither feasible nor necessary for the Institute to offer training in all agriculturally related fields. Demand for the disciplines presently offered by the PGIA appears to be more than adequate to absorb all postgraduates that can be produced by that Institute in the foreseeable future. Furthermore, if it were to attempt to broaden the range of its offerings into such fields as fisheries and forestry, the resultant diversion and dilution of resources would seriously jeopardize the PGIA's possibility to maintain and upgrade the quality of its postgraduate teaching and research programs at this time.

To summarize, the Team recommended that PGIA postgraduate offerings be limited for the foreseeable future to those disciplines in which it is already developing expertise. Training abroad will continue to be required for some time to come in other agriculturally related fields. The project as designed is limited to strengthening these core disciplines.

Alternatives for providing training in these disciplines are discussed in the sections which follow.

#### A. Quality and Relevance of Training

The PGIA/Faculty of Agriculture is just embarking on a major plan for upgrading its facilities and staff. Within five to seven years, it is reasonable to expect that the institution with the assistance to be provided will be capable of providing good quality postgraduate training in all of its disciplines. At the present time, its teaching capability in some disciplines is considerably stronger than in others. In terms of postgraduate research, the institution's own facilities are at present seriously limited. Through collaborative arrangements with other research organizations, however, postgraduate research on a relatively wide range of problems is possible.

From the standpoint of its relevance to Sri Lanka's needs, postgraduate training in the country is generally preferable--particularly in the applied fields. Postgraduate research conducted in Sri Lanka on Sri

Lankan problems provides the student with training most relevant to his career and, at the same time, contributes directly toward the solution of those problems. Furthermore, such students are less likely to "defect" to other countries than those who receive all of their training abroad. Exceptions to the preference for in-country research would include areas in which expertise and/or necessary facilities do or will not exist in Sri Lanka and cases where specific concepts or techniques need to be introduced into the country.

Based on the above considerations regarding quality and relevance of training, AED suggested that postgraduate students should be encouraged to carry out their dissertation research in Sri Lanka insofar as possible. The longer term objective should be to provide an increasing proportion of academic training in Sri Lanka as the PGIA develops its capability. Some postgraduate training abroad should be continued to avoid excessive "in-breeding", however.

B. Costs for Participant Training Abroad vs Training in Sri Lanka

According to results of the manpower study, an average of 67 students per year should start postgraduate studies at the PGIA in order to satisfy 80 percent of the projected demand. The present section compares the investment and operating costs required by the PGIA to train that number as compared with the cost of training an equal number abroad.

The cost comparison is based on the following assumptions:

-Duration of training abroad averages:

M.Sc.	(no research)	1½ years
M.Ph.	(research included)	3 years
Ph.D.	(research included)	5 years

-Annual dollar costs of academic training abroad average:

U.S.A.	\$14,000
U.K.	\$9,000
South Asia	\$6,000

-Duration of training at the PGIA in Sri Lanka

M.Sc.	(no research)	1 year beyond B.Sc.
M.Ph.	(research included)	2 years beyond B.Sc.
Ph.D.	(research included)	3 years beyond B.Sc.

Annual dollar costs of academic training at PGIA average \$1,211.

The AED study shows an average need over a five year period of 52 M.Sc; 3 M.Ph.; and 12 Ph.D. to supply 80% of the identified demand (page 40).

Total dollar costs of such training assuming that it is distributed equally in the U.S.A., U.K. and South Asia would be: (000)

Degree	Quantity	U.S.A.	U.K.	S. Asia	Total	5 year Total
M.Sc.	18 each	378	243	162	783	3,915
M.Ph.	1 each	42	27	18	87	435
Ph.D.	<u>4</u> each	<u>280</u>	<u>180</u>	<u>120</u>	<u>580</u>	<u>2,900</u>
	23	700	450	300	1,450	7,250

As the PGIA and the Faculty share most facilities, equipment, farms faculty and staff, their combined operating budgets (which include costs of new facilities to be constructed) were used in projecting the annual per student costs. An average of such costs (including inflation) for the 1978-82 period is rs 4,049,000 (see page 57) as follows:

Projected Budget	In Rupees (000)					Average
	1978	1979	1980	1981	1982	
Faculty	2,895	3,039	3,184	3,303	3,420	3,168
PGIA	<u>651</u>	<u>785</u>	<u>944</u>	<u>998</u>	<u>1,029</u>	<u>881</u>
Total	3,546	3,824	4,128	4,301	4,449	4,049

The combined average annual enrollment for both institutions from 1978-82 is projected as 209.

Projected Enrollment

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>Average</u>
Faculty	100	150	200	200	200	170
PGIA	<u>26</u>	<u>36</u>	<u>41</u>	<u>46</u>	<u>48</u>	<u>39</u>
Total	126	186	241	246	248	209

The above represents a projected annual per student cost of Rs19,373 or \$1,211 (at Rs16=\$1).

Following the same annual degree distribution, the comparable cost of educating 80% of the postgraduate degree demand in Sri Lanka at PGIA would be:

<u>Degree</u>	<u>Quantity</u>	(000) <u>(Dollar Costs)</u>	<u>5 yr. total</u>
M.Sc.	54	65,394	326.97
M.Ph.	3	7,266	36.33
Ph.D	<u>12</u>	<u>43,596</u>	<u>217.98</u>
	69	\$116,256	\$581.28

The cost for training the required number of postgraduate students outside of Sri Lanka (1/3 U.S.A., 1/3 U.K., 1/3 ASIA) is approximately 12 times greater than training them in the PGIA. This is attributable to higher tuition and participant costs and a greater time required to satisfy the various degree levels. Individual participant stipends for study at PGIA were not considered as these are customarily paid by the postgraduate students' employer.

C. Alternatives for Staff Development

The projected Faculty/PGIA staff to be trained under this project is 50. It is anticipated that thirty-eight will be funded by AID and twelve by other donors. The trainees include some present junior and senior staff as well as new recruits necessary to handle increased enrollments.

Four alternative types of academic programs have been evaluated and are discussed below:

1. All training abroad

Under this alternative a staff member would spend the entire training period abroad and return to Sri Lanka with

an advanced degree. That degree might be: 1) M.Sc. in Agriculture, which would require approximately  $1\frac{1}{2}$ -2 years at a U.S. university; an M.Ph. requiring 3 years; or Ph.D., which would require approximately 5 years provided this degree is taken at the same university as the M.Sc./M.Ph.

This approach appears to be the most expensive and time consuming. Each participant would be out of Sri Lanka for five years or more as is now the case. This represents a very heavy drain on scarce and badly needed talent.

2. Academic training abroad; thesis research in Sri Lanka; return abroad for completion of degree

During the first two calendar years the participant would be expected to complete required course work for his M.Sc. and most course work for his Ph.D. including a complete research proposal based on current priority Sri Lankan needs in his field.

After only two years absence he would return to the Faculty/PGIA for  $1\frac{1}{2}$ -2 years to conduct his research under the joint supervision of a Sri Lankan Ph.D. and a visiting expatriot professor assigned to PGIA. Most research would be carried out on campus. As research data collection does not usually require exclusive dedication the participant (already possessing one post-graduate degree) would also teach some classes or be employed in other professional pursuits at the Faculty/PGIA. On both counts he will be making a direct contribution to Sri Lankan agricultural development. Besides his university salary he will also receive a small research grant (approximately \$3,000 per year).

When his data collection is completed the participant would return to the foreign university for up to six months to complete remaining course work, prepare and defend his thesis and receive his degree.

This alternative would be approximately \$15,000 less expensive per participant than alternative #1 - a savings of about \$570,000 for the 38 trainees under the project.

A variation on this alternative would be for the Ph.D. candidate to carry out thesis research at one of the international centers such as IRRI, rather than in Sri Lanka. This option would be somewhat more expensive, as costs during the research period would undoubtedly be greater than if the candidate were in Sri Lanka (the home country).

3. Academic training abroad; thesis research and completion of degree in Sri Lanka; degree granted by university abroad

Only candidates with a previously earned M.Sc. degree would be considered. Academic training abroad would require two or 2-1/2 years, after which the candidate would return to Sri Lanka for thesis research. During the time required for data collection, the candidate would not be given other Faculty/PGIA responsibilities.

Selection of this option would be contingent upon the availability of qualified staff, such as visiting professors from a linkage university, at the PGIA/Faculty. They would guide the candidate's research and administer the final examination. The presence of three visiting professors who are members of the graduate program of that university would probably be required (they could be in Sri Lanka on either long or short term assignments).

The project team and Faculty felt this option was not viable since it would require too many expatriates in Sri Lanka at considerable cost and would probably not meet the requirements of many degree granting institutions. In addition the candidate would be out of Sri Lanka for approximately four years before beginning his research. Granting of the degree would require 5½-6 years before he would be contributing directly to the Faculty/PGIA on regular assignment.

4. Part of academic training abroad; thesis research and completion of degree in Sri Lanka; degree granted by PGIA

The time abroad (1 to 1-1/2 years) would be an enrichment program during which a portion of the course work would be taken. Credits for those courses would then be transferred to and accepted by the PGIA. Remaining course work, thesis research, and the completion and granting of the degree would be done in Sri Lanka. The Faculty does not feel this minimal training would meet the requirement for a skilled staff to provide post graduate training to others.

#### Implications of the various alternatives

Numerous combinations of such alternatives could be developed which might increase or decrease costs to a limited extent. In general terms, however, the differences in investment required for various systems of providing appropriate postgraduate training of core staff are not of sufficient magnitude to justify selection of a particular alternative solely on the basis of cost.

Within the general framework of the suggested options, the AED Team recommended flexibility of selection to permit tailoring the postgraduate program to meet the needs of the individual and the institution.

The Faculty/PGIA and USAID/SL has opted for Alternative #2 as being the most practical, productive and cost-effective for the majority of staff training. Therefore the basic design of this project has adopted the system of "Course study abroad, research in Sri Lanka and completion of degree abroad" for the development and training of core staff.

Adhering to the principle of flexibility, Alternative #1, All training abroad, may be utilized in special cases.

PART IIIA - TECHNICAL ANALYSIS

4. The need to address both PGIA and Faculty capability

The project as originally conceived was focused on expanding the indigenous capacity to train post-graduates and was not focused on efforts to expand B.Sc. qualified personnel. This was the case essentially for these reasons: 1) major studies of demand had focused on the need for more post graduates; 2) PGIA was a new institute with few resources; 3) and PGIA had its own 5 year development plan to present for financing.

During project analysis the need for more B.Sc. graduates surfaced and was confirmed and at the same time the Faculty of Agriculture came forward with their own 5 year development plan.

Consequently since a demand existed for both levels of training and since while separate organizations, PGIA and the Faculty share the same staff, it was decided to redirect the project to service the needs of both.

##### 5. Training Program for PGIA/Faculty

PGIA was founded because of the needs of various research organizations and the broader agricultural community for highly trained M.S. and Ph.D. leaders. No institution qualified to grant such degrees existed in Sri Lanka prior to 1975. Once the Faculty/PGIA is upgraded through this project, Sri Lanka will have the capability for granting approximately 80% of the M.S., Ph.D., research based degrees can only be granted by an equally trained staff. Hence the need for such high level training. Normally and as originally conceived this would require four to six years absence from Sri Lanka to obtain. This project, however, is designed to give only academic courses and laboratory work abroad. All thesis research will be carried out in Sri Lanka on problems that affect Sri Lankan rural and agricultural development. Participants will be qualified agriculturalists already employed by the Faculty for positions already approved under the PGIA five year plan. Most of their undergraduate study will have been in English which will make their transition to study in the USA (or England, Canada and Australia as well under other donor scholarships) easier. It is expected that their M.S. course requirements may be satisfied within 12 months. An additional 12 months of Ph.D. studies will cover major coursework and thesis planning. The staff member will then return to Sri Lanka where he will conduct his research under the guidance of expatriate professors at least one of which is planned to be from the foreign university where he is studying. At the completion of his research he will return to the U.S. for an additional period of coursework and defense of his thesis.

This arrangement has obvious advantages. It will: 1) Permit the Faculty staff to receive academic/research Ph.D. degrees in a relatively short time; 2) the resultant quality of Sri Lanka professors will be greatly enhanced fulfilling the excellence of staff requirement for internationally accredited institutions; 3) staff members will be absent from Sri Lanka only two years before returning for research 4) all research will be indigenously based within the ecological, social and economic conditions it is meant to serve; 5) staff will resume half teaching loads during their 18 month research time thus making an early and necessary input to Faculty/PGIA expansion programs, enabling the intake of students to increase at a more rapid rate; and 6) staff training abroad will be definitely related to application in Sri Lanka. Several U.S. universities including Cornell, Nebraska, Maryland, and Arizona have been approached regarding the feasibility of this plan and find it acceptable.

6. Faculty/PGIA outreach linkages with farmers and other agriculture sector institutions

Important outputs of this project designed to double and triple the number of university and post-graduate agricultural students respectively, are to create an environment within which both students and professors not only study but become aware of the social responsibilities their increased knowledge better prepares them to accept. For simplicity's sake this social awareness may be thought of as university extension of services to the community at all levels... or outreach.

Identifiable linkages that together constitute a viable system of two-way communication between producers of new information and its users are essential to rural development. Research needs and priorities must get to the researcher quickly and without distortion. Results of this research must reach the farmer quickly, accurately, and in a form that the farmer can understand and apply. Such two-way communication is equally critical to the development and continuation of education and training programs that are relevant to the needs of the people and assist them in changing their present ways of doing things - i.e. in adapting new behavioral patterns.

Information obviously flows from the PGIA and Faculty to farmers and vice versa through intermediaries (agricultural sector institutions that have specific responsibilities for providing assistance and services to farmers) as well as through direct contact with the farmers themselves. The critical factor with respect to flow either directly or through intermediaries is a system that facilitates rather than impedes effective communication.

Such linkages now exist. This project will expand upon them and help develop a framework within which they may flourish. The feasibility study for this project addressed PGIA community linkages in Chapter VIII of the Report which is on file in ASIA TR and PD. The following are a few excerpts from the Report which show how the project develops such linkages.

Linkages of the PGIA with the Small Farmer

The PGIA must have significant direct contact with rural communities and farmers. The number of people with whom it can work directly is limited, however, by constraints in time and resources. Therefore, the PGIA must also seek mechanisms that have a multiplier effect. In practical terms, this implies indirect contact with those farmers through the organizations that have responsibility for direct assistance to them.

A large number of governmental agencies provide technical advice and services to small farmers. A group of similar size is charged with responsibility for research to develop appropriate improved technology. At the present time, there is much fragmentation of effort.

The present government, however, is committed to a philosophy of decentralization and coordination of assistance to small farmers, and to involvement of the local people in planning such programs. The Faculty/PGIA must plug into this structure to serve the small farmers of Sri Lanka most effectively. Its graduates must be equipped to deal with the small farmer and his problems. Training of trainers and promoting the interchange of information and ideas among organizations with similar interests helps to accomplish this.

A strong commitment exists at both the institutional level and among faculty members as individuals to become directly involved with people in the rural sector.

During the first undergraduate year farm practice course, each student is assigned a farmer from whom he is expected to obtain information on crop production technology and farm management. During the first and third years, students are required to study the weekly village market to observe how peasant farmers market their perishable produce. They also participate in demonstrations conducted in farmers' fields particularly in Agricultural entomology. During the third and fourth years, students following production courses are required to visit peasant farmers/smallholders during term times and vacations in order to discuss their production problems.

At the postgraduate level, extension courses are people-oriented. A course to be introduced in the Department of Crop Science calls for each student to work directly with a farmer through a full agricultural year.

The Department of Crop Science proposes to use facilities at the Maha Illuppallama unit during vacation periods to conduct farmer's short courses on crop production. The Department of Animal Husbandry has initiated action to acquire 100 acres of land from the University for the purpose of establishing a teaching and extension livestock unit to be used as an extension field laboratory for staff and students, and for providing improved know-how and breeding materials to farmers in the area.

The Department of Animal Husbandry issues about 12,000 day-old chicks per month to farmers for breeding and production, as well as small numbers of breeding stock of pigs, rabbits and ducks. A few bull calves are also made available to livestock producers in all parts of the country. Farmers in the mid-country are provided free planting material from a pasture nursery maintained by the Animal Husbandry

Department with the assistance of the Department of Agriculture (under this program, farmers are also provided with improved planting material of cassava and sweet potatoes). Both those who purchase chicks or breeding stock and those who receive free planting materials are offered technical advice on their use and management.

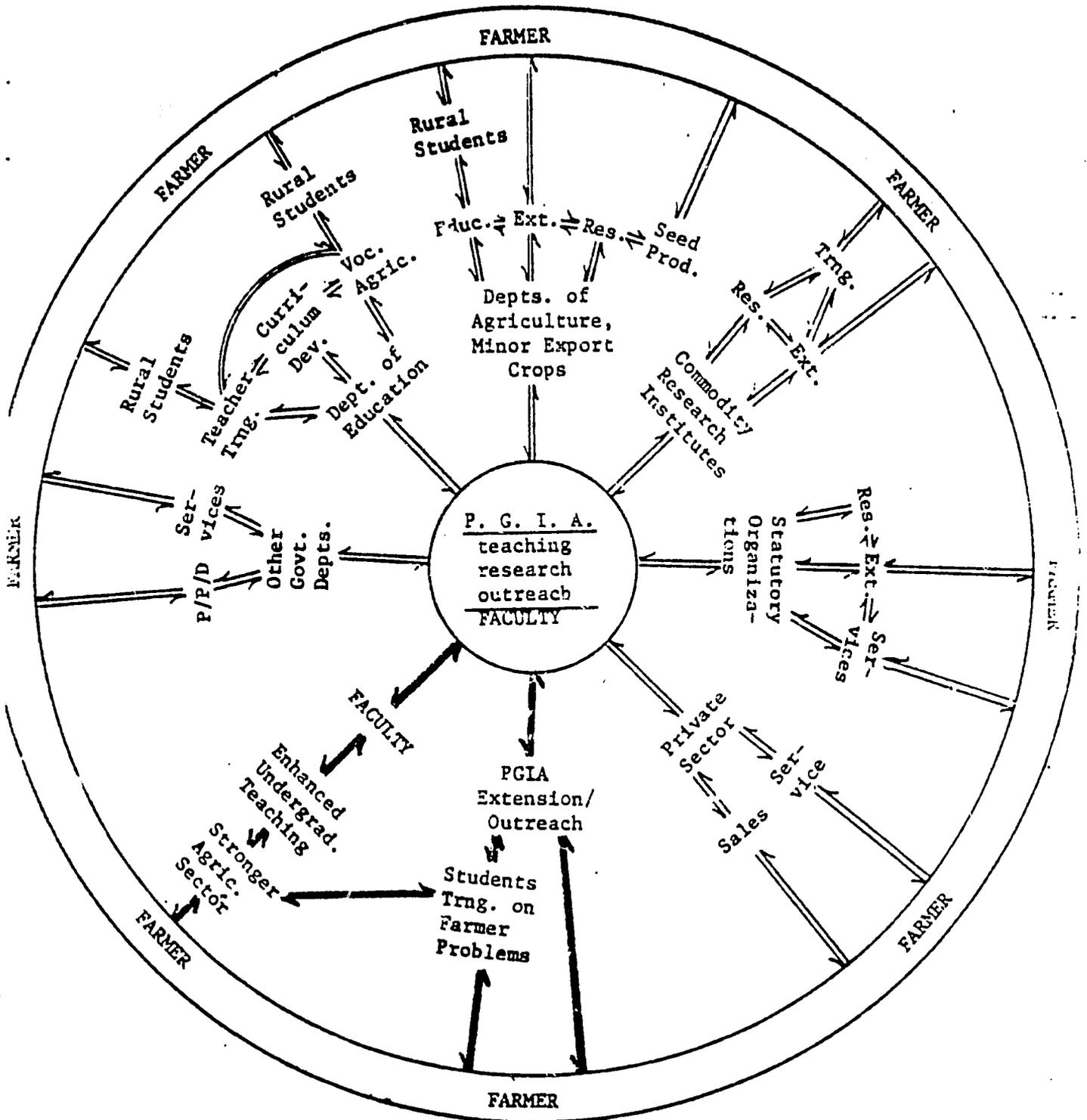
Most, if not all, senior staff participate in both in-service training courses and farmer training classes organized by various other agencies. The Head of the Department of Agricultural Biology, for example, has been actively involved in organizing field days for farmers and schools; has conducted agricultural seminars and organized agricultural competitions for farmers; and has organized film shows and distributed seed materials with the assistance of the Department of Agriculture.

Faculty members have also become actively involved in voluntary and service organizations. One senior staff member has served as an advisor to the Sarvodaya Movement, a voluntary rural development organization in Sri Lanka to help plan a cropping system and develop a farm in the low-country dry zone. At least two members of the Faculty are active members of the Kandy Lions Club. In addition to serving as officers, they have provided leadership to the agricultural projects of the Club. The Head of the Crop Science Department is currently District Chairman in agriculture of the Lions Club of Sri Lanka. For the current year, the District has formulated a program to assist smallholders and youth in the agricultural sector.

The list of activities cited above is illustrative only; it is no means exhaustive. It does indicate, however, the strength of the commitment of the PGIA and its faculty to the small farmer.

#### Outreach Program

An outreach program is an integral component of the PGIA and Faculty. Outreach refers to all activities of the Faculty of Agriculture/PGIA, directed toward audiences outside the student body and faculty, which directly or indirectly effect rural communities and people engaged in agriculture or associated enterprises.



Linkages and channels of communication envisaged by the PGIA for developing and maintaining effective contact with the farmers of Sri Lanka.

(Conceptualized by Prof. Y.D.A. Senanayake, Head, Dept. of Crop Science)

The Faculty/PGIA extension teaching and research programs, and their outreach activities, are at an early stage of development. Extension has been an identifiable component of the curriculum for only about two years, and outreach activities have to date been carried out on an ad hoc basis. In terms of future development, however, the five year development plan incorporated in this project includes specific plans for strengthening these activities.

Although still under the department of agricultural economics new facilities for outreach audio-visual and print materials are included in this project, and several programs are planned.

In mid-1976, the PGIA co-sponsored with SEARCA (S.E. Asia Regional Centre for Graduate Study and Research in Agriculture) a two-day training seminar on agriculture) a two-day training seminar on agricultural research management for Sri Lanka researchers and research managers. Proceedings of the seminar were subsequently published. A second such seminar, directed toward experiment station managers, is planned for early 1978. These two events represent outreach activities directed toward the professional level in agriculture.

As an initial step toward increasing its understanding of small farmers and rural communities, the PGIA has proposed that it select and become associated with a village as a social laboratory. The village has been selected, and a baseline study will be initiated as soon as the proposal is approved.

Several audiences have been identified for Faculty/PGIA outreach. The small farmer, landless laborer and the estate manager will together constitute the ultimate audience. Direct contact with these groups must be maintained. There is no substitute for direct contact with, and understanding of, the small farmer and his situation in the training of postgraduate students who will be working with farmers in the future. Such understanding is also essential to the continuing development of a research program that is problem-oriented and relevant to the needs of Sri Lanka. Dr P. Sathiyapala, acting Head of the Agricultural Economics and Extension Department has written:

"The new outreach program will strengthen the service function of the PGIA/Faculty. It has the aim of reaching the small farmer directly and indirectly to improve his livelihood. In a very direct way, through the proposed social laboratories to be set up in selected villages, the staff and students both at undergraduate and postgraduate levels are expected to participate in rural development activities. In an indirect way, the outreach program intends to improve the capabilities of the change agents of government institutions and corporations who would in turn come in direct contact with the rural poor.

Five different audiences including the small farmer, as the recipients of services of the outreach program, have been identified. An additional audience can be identified in relation to the direct involvement of the staff and students of PGIA/Faculty in community development activities. This is the university community consisting of staff and students. Perhaps this would be the first audience to be reached by the intended program.

The outreach program can best serve the rural masses only carefully identifying and studying them to understand their real needs. These needs could be related to farming, home living, informal education, etc. In this effort the assistance of an experienced extension person and rural sociologist is needed. (Two such staff will receive Ph.D. training and conduct their guided research in Sri Lanka under the project.)

The knowledge that originates in the fields and laboratories of the university and other research institutions should be extended to the rural masses in order to elevate their living standards. The flow of information from the university to the rural people needs to be improved. Unless the information is delivered in a manner that can be utilized by the rural people, insufficient use is made of the new knowledge. It is therefore important to find out the suitable means of reaching not only the literates but also the illiterates in these communities. This calls for another area of research needing the assistance of a communications expert. Such research will also inquire into the usefulness of the different instructional media used singly or in combination in the process of practice adoption."

In addition to Faculty, students and rural dwellers as direct target audiences, the following referred to by Dr. Sathiyapala will serve as essential indirect audiences:

- \* Key staff in organizations who can in turn impart technical training to field staff;
- \* The agricultural research community;
- \* Institutions in need of improving their communication skills;
- \* Those in need of improving farm management skills.

A time-phased schedule for staff and students to develop activities with each of these audiences as new staff are hired and trained, and buildings, equipment, and technicians are made available as well as adequate means of transport are acquired, has tentatively been formulated and agreed to by the Dean/Director and department heads.

Table Illustrative calendar of outreach activities directed toward  
People in Selected Villages (1)

Year	Social laboratory no.1	Social laboratory no.2
One	<p>Select two villages near Peradeniya (completed).</p> <p>Conduct baseline survey.</p> <p>Identify, with people, specific agricultural production problems (base on total farm enterprises).</p> <p>Select, with the people, one priority problem in each of crop and livestock production, and initiate assistance program which includes both.</p> <p>Establish regular "classes" with villagers directed toward their felt needs.</p>	
Two	<p>Expand work in accordance with capability.</p>	<p>Select two villages in an area where rapid change is likely to occur as the result of some new resources becoming available, e.g. the Mahaveli Project (one traditional &amp; one new village). (2) Conduct baseline study.</p>
Three	<p>Continue expansion of work</p> <p>Introduce an additional component of rural development, e.g., work with women on health and nutrition in collaboration with Faculty of Medicine</p>	<p>Continue to develop work along same lines as in social laboratory no.1 in previous years</p>
Four & Five	<p>Continue development in both social laboratories in accordance with identified needs and opportunities.</p>	
(1)	<p>A collaborative program to involve all Faculty/PGIA departments.</p>	
(2)	<p>Establishment of the second social laboratory appears feasible due to the proximity of the suggested area to Maha Illuppallama. It must be recognized, however, that work in these villages will proceed less rapidly than in the first two villages due to their distance from Peradeniya.</p>	

Table Illustrative calendar of outreach activities directed toward:  
Key Staff in Agricultural Organizations who have direct responsibility for working with farmers

Activity	Year One	Year Two	Year Three	Year Four	Year Five
Short courses of one week or less	2	3	3	2	Continue in same pattern, but expand as staff and facilities permit
Longer term short courses		1	1	2	

Table Illustrative calendar of outreach activities directed toward:  
Agricultural Research Community

Activity	Year One	Year Two	Year Three	Year Four	Year Five
Annual conferences (1 day each)	An. Hus. -----				
	Field -----				
	Crops -----				
	Horticulture -----				
			Cropping -----		
			Systems -----		
Publications of Faculty/PGIA Research findings				-----	
Publication of quarterly newsletter on research progress and findings (1)					

(1) Include feature articles on other research institutions, beginning in Year Five.

Table Illustrative calendar of outreach activities directed toward:  
Those in Need of Improving Their Communications Skills.

Activity	Year One	Year Two	Year Three	Year Four	Year Five
Workshop on agric. communications (1-2 days)	1 (use outside resources)	1	1	1	1
Short courses of one week or less		Writing skills	Graphic arts skills	Use of audio media	
			Selection and use of media for a specific audience	-----	
Longer term short courses					Application of communication skills

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Table Illustrative calendar of outreach activities directed toward:  
Those in Need of Improving Their Management Skills.

Activity	Year One	Year Two	Year Three	Year Four	Year Five
Workshops on farm mgmt., related to small-holder agriculture (1-2 days)		1	2	2	Continue in same pattern, but expand as staff and facilities permit
Workshops/short course in other areas of management				1	

## 7. Requirements for Developing an Adequate Research Program

Creation of the Postgraduate Institute of Agriculture was justified on the basis of need for advanced training of research personnel and high level agriculture managers in Sri Lanka to formulate test and apply alternative solutions to pressing problems within local environmental conditions. In fulfilling this mandate, the Faculty at Peradeniya and the PGIA will focus on A) providing an academic base for study identification and catalogers of the country's agricultural and rural development needs; B) training Department of Agriculture personnel and the broad spectrum of others concerned with rural development and agricultural endeavours in both pure and applied research methodologies; C) sensitizing through research, planners, managers and implement action agents to the needs of villagers' perceptions of their own "basic needs" and role in improving their lot; D) improving the documentation, dissemination and utilization of research findings; E) acting as a catalyst for improvement in the two-way flow of information and services; F) closing the gaps between plantation based research provided by commodity research agencies and the survival concerns of the small farmer and landless rural dweller; G) assisting the National Science Council's efforts to coordinate all scientific research in Sri Lanka.

### Faculty/PGIA Internal Requirements

- A. Management - To assist research coordination the PGIA contemplates adding an Assistant Director for Research to work closely with the existing Faculty Research Committee. (If such is not possible under the new University Bill to become effective in late 1978, a member of the Registrar staff will be given specific coordination and fund seeking responsibilities).
- B. Faculty - A faculty well trained in modern research methods with practical research experience in Sri Lanka and with high motivation towards the social impacts of their work is essential. Adequate time from classroom teaching and other duties must be available for it is anticipated that nearly all of the 50 staff to be trained overseas by this project and other donors from 1978 to 1986 will have conducted their academic research in Sri Lanka at the PGIA on problems vital to Sri Lankan rural development. A heavy emphasis for this research will be focused on small farm and village needs.
- C. Budget - Sufficient funds must be planned for to meet research objectives. Regardless of the source of funds, they must be dependable. The PGIA funding arrangement is ideal for channeling financial commitment, from outside. The Faculty currently receives regular small research grants from the Department of Agriculture, the National Science Council of Sri Lanka, World Food Programs, IRRI, the East West Center in Hawaii and many others. Larger contributions are expected as the additional person mentioned in A above assumes responsibilities.

D. Facilities - Well equipped laboratories, land and equipment for field experimentation and adequate transportation to and from the Campus to field sites must also be provided.

E. Library - Research not only generates new knowledge but depends heavily on what has been done previously of a similar nature by others. An up-to-date library collection is often the key to successful research projects and is included in the project.

### Project Implications

A necessary and practical thrust of this project is development of Faculty and PGIA farms into the Agricultural Experiment Station Unit which will serve as the field research arm for post graduate, undergraduate and lower level short term training. This unit will be managed by a full time administrator attached to the Faculty Deans or PGIA Director's staff. Each farm will have sufficient managers, technicians and maintenance personnel to maintain the stations efficiently on a year round basis irrespective of University classes and research teams' utilization of experimental plots and laboratories.

At present the 205 acre farm at Dodangolla, Kundasale, (12 miles away from Campus) and the 24 acre farm at Meewatura, Peradeniya, located 1 mile from Campus, are under-utilized due to transportation difficulties and lack of adequate laboratories, equipment, farm structures, field development, hostel accommodation and staff quarters.

The PGIA FIVE YEAR DEVELOPMENT PLAN (1978-83) calls for a complete upgrading of these farms into a viable Agricultural Experiment Station which will in addition, spread the fruits of its activities to the small farmers and villagers within its geographic zone of influence. This project will support the station's development as indicated below.

#### EXPERIMENT STATION DEVELOPMENT MEEWATURA/DODANGOLLA

<u>Item</u>	<u>\$ (000)</u> <u>Meewatura</u>	<u>\$ (000)</u> <u>Dodangolla</u>	<u>\$ (000)</u> <u>Total</u>
1. Buildings	35	242.9	277.9
2. Furniture	8	49.2	57.2
3. Land Development	14	39.7	53.7
4. Field Equipment	10.6	44.5	55.1
5. Training Faculty Equipment	-	10.0	10.0
6. Vehicles - 2 trailbikes, 1 minibus, 1 pickup truck, 1 stake truck	-	24.4	24.4
	<u>67.6</u>	<u>410.7</u>	<u>477.3</u>

Improvements at Meevatura will include: a fully equipped machinery repair/storage unit, field laboratory, plant house and staff quarters, roads, fencing, drainage, water supply, irrigation and electricity, and appropriate small tractors, accessories and farm implements. It is planned that small 1/4 - 1 acre "home garden" demonstration plots will be established for improved nutrition, and waste utilization.

The Dodangolla farm is divided into two units: Crop Science, 159 acres, and Animal Husbandry, 46 acres. Here buildings will include a 15,000 sq. foot hostel and study area to accommodate 50 students, a crop propagation unit, a machinery storage area and workshop, a dairy farm and site and staff quarters. These will complement the existing milking parlour, seed laboratory and other small buildings now in use. Land development will include electricity hook up, roads, fencing, terracing, irrigation, water and drainage. Most of these improvements will be done by the farm staff. Field equipment includes small tractors, with complete accessories as well as a pick up truck, a stake bed truck and a mini bus for student transportation.

The greatest single limiting factor for farm utilization at present is lack of transportation. There is no way for the postgraduate students to use the field facilities unless transportation is provided. The transportation facilities provided by this project will enable an effective use of the land and an effective training program for the postgraduate and undergraduate students. In addition to the minibus to be used exclusively by the Experiment Station, another minibus, 2 thirty-four passenger buses, 5 trail bikes and 6 jeeps will form an administrative motor pool for use in relieving the transportation bottleneck for Faculty, visiting lecturers and students. Four other departments will have a jeep assigned to meet their heavy requirement for field study.

Demonstrations, field exercises, and research related appropriate technology will stress the continued use of animal power. The limited powered farm machinery will provide a balanced farm operation.

New laboratories included in the Five Year Plan and supported by this project will be the addition of radio isotope, infra-red technology and atomic absorption spectro-photometry units. The design of these laboratories will be coordinated by a space utilization technical advisor early in the project.

Library facilities to accommodate research have already been funded by the GSL and the new PGIA building recently completed. There is adequate space for 67 individual carrels as well as reading rooms, stacks for over 32,000 books, a reference room for 2,000 volumes, 180 journals, and back files of an infinite number of journals and reports on micro film or micro filche. A special air conditioned room has been provided for this latter service. By 1983, this project expects to increase the books from 1,080 to approximately 18,000; journal subscriptions from 5 to 165; and backfiles on film/filche from 0 to 90. It will also supply short term training for the librarians. Other donors have agreed to add to these collections, developing the library into a center of excellence.

To keep abreast of current developments and needs the librarian will serve as an ex-officio monitor of academic committees and the PGIA Boards of Study.

Research is not completed until it has been written and published. A thesis is only the first step in the publication process. Members of the faculty have the privilege of publishing in the Journal of National Agricultural Society of Sri Lanka, Journal of National Science Council of Sri Lanka and in the Tropical Agriculturalist. In addition they also publish in many foreign scientific publications. The research findings must also be organized so that they have application to extension workers and small farmers. To this end a modest multilith printing capacity will be included in the outreach audio-visual laboratory. Special attention will be given to preparation of simple materials which interpret research findings into language and graphics that can be readily understood and applied in the field. Systematic publication and dissemination of abstracts and a limited quantity of full reports is provided for under this project.

As the carefully conceived PGIA Five Year Plan develops; the Faculty increases its skills in Ph.D. level research; visiting professors assist in developing new programs; coordination of Sri Lankan agricultural efforts broadens; new laboratories are built and equipped; the Experiment Stations realize their potential; and the library expands its services and the entire Faculty and student body become more sensitized to Sri Lankan development problems, the Faculty and PGIA will become an effective leader in Sri Lankan research.

## 8. Validity of PGIA/Faculty Requirements and Plans

The AED team reviewed various aspects of the expansion planned under this project, by PBIA and the Faculty. AED's findings on aspects not covered earlier in this technical analysis are summarized below. Parenthetical comments are those of USAID.

### A. Curriculum

The necessity for offering courses in three languages places a burden on the teaching staff. Each professor must be capable of teaching in English as well as either Sinhalese or Tamil. Instructional materials are prepared accordingly.

The undergraduate curriculum was considered to be generally quite good. The study particularly commends the first year practical farm training which obligates each student to become actively and personally involved in farm practices, and the specialization offered in the last term of the fourth year, which prepares students for existing labor market requirements.

At the postgraduate level, the number of courses listed in the PGIA Prospectus was considered to be somewhat excessive, and the number of students per course was found, in many cases, to be very low. Some overlapping and duplication of courses within and between departments were found; some collaboration between departments, including team teaching, is an established practice, however. The study commends plans of several departments to increase their offerings of short courses for practitioners as part of their outreach "services" program.

### B. Research

The Team found research projects of the PGIA/Faculty to be, in general, highly relevant to Sri Lanka's needs. Research priorities are being established in some departments. More planning of this nature is needed, particularly with regard to need for long term projects. PGIA/Faculty research is at present supported largely from outside funds, as University support for research is minimal. Several research projects involve more than one department and, in a few cases involve collaboration with other faculties of the University and other organizations. There was still some overlapping between departments with respect to research projects, however. (The project includes provisions to strengthen research coordination).

### C. Staffing

Although the present staff is well-qualified, it is highly inadequate in numbers. Furthermore, in some critical disciplines (animal breeding and entomology are examples), there is no staff on board at present. In

order to offer the needed range of postgraduate courses, it is necessary to make extensive use of non-faculty instructors from the PGIA Teaching Panel in approximately 50-80 percent of the courses. These instructors are fully qualified at the M.Sc. and Ph.D. levels and are actively employed in Sri Lankan agriculture. They are a source of strength to the programs and offer an excellent liaison with both government and private industry; however the fact that they have often full time jobs limits the time they can spend on instructing students and supervising research. The intent of the PGIA is to reach a balance of 80 percent faculty and 20 percent non-faculty.

Plans of the Faculty/PGIA for expansion and development of core staff are generally supported. Visiting professors from foreign institutions could help to fill the immediate need until core staff return from training, as well as contribute to overall development of PGIA post-graduate teaching and research programs.

#### D. Facilities and Equipment

Present facilities were found to be woefully inadequate, and much of the equipment is antiquated or worn out. Proposals for new facilities are generally supported; however, all plans need careful review before any new construction is started. Earlier requests for equipment are considered inadequate — substantial increases will be needed for most departments in order to fulfill their basic needs. \* (Subsequent to the Team's visit more appropriate equipment needs were developed and funds are included for this equipment. In addition building plans were refined and will be further determined early in the project.)

#### E. Departmental Organization

In general, the Team did not support proposals of the Faculty to increase the number of departments through division of those which already exist. It was suggested, however, that the Food Technology Division of the present Department of Agricultural Chemistry be shifted to the Department of Animal Husbandry, or perhaps, the Department of Crop Science. The separation of Extension into a separate department is justified. (The project as designed does not expand the number of departments beyond that recommended by the Team.)

#### F. Experiment Station Development

Research is a legitimate and necessary component of the program of institutions such as the PGIA and the Faculty of Agriculture, and the experiment station should be their research arm. The study sees no conflict between the proposed PGIA/Faculty research program and presently existing research arrangements in Sri Lanka. The University could play a significantly more important role in research coordination and dissemination.

### G. Library Development

When completed, the library in the new PGIA building will have stack and reference room capacities of 32,000 and 2,000 volumes, respectively, plus an air conditioned room for storage of microfilm and microfiche. Library personnel, presently provided under provisional arrangements, will not be adequate to staff the new faculty. If present plans to bring the complement to five fulltime positions are implemented, that staff should be adequate to handle the anticipated rapid growth in acquisitions for several years. Library development is essential to PGIA and Faculty research and teaching. (The project includes financing for library development.)

### H. Courses of Study

As a high percentage of freshmen do not have a practical farm background experience upon which to base their studies, all first year students are required to participate in farm practice training, normally held at the Maha-Illuppallama Unit located 80 miles north of Peradeniya, and at the Dodangolla University Farm situated 12 miles from the Faculty of Agriculture. These studies also include a 4-week period of familiarization with farm machinery, and about three months of plantation evaluation carried out in Kandy or on a tea estate. During this 11-month period the students are enrolled and receive instruction in the disciplines of crop production, animal husbandry, agricultural economics, and agricultural engineering. Second and third year courses cover the broad fields of applied agriculture, farm management and rural sociology.

Senior staff direct the specialization program of the fourth-year students and teach the 500 level courses listed in the Faculty of Agriculture Handbook. During the last term of the 4-year undergraduate program, each student must participate in one of several specializations offered in the six departments described below. This involves some aspect of research (on a small scale basis) and provides the student an opportunity to participate in a project and prepare a report following the pattern of an article in a scientific journal.

The six major Departments generalized in the undergraduate B.Sc. degree and specialized through the Post Graduate Boards of Study at PGIA are as follows:

#### 1. Department of Crop Science

Crop Science - is one of the two basic departments of the Faculty of Agriculture. Courses are production oriented and integrate technology derived from other fields of agricultural science. The undergraduate teaching program covers the principles and practices of field, horticultural, plantation and minor export crop production. The postgraduate curriculum exceeds the manpower capability of the present senior campus staff. It is necessary, therefore, to draw lecturers from the Panel of Teachers-mainly Department of Agriculture employees with Ph.D. degrees

who live and work near Peradeniya. Production-oriented short courses for local farmers and agricultural workers are being developed as part of the PGIA Outreach program.

2. Agricultural Biology - is comprised of plant physiology, genetics and plant breeding, plant pathology, crop botany, principles of entomology and applied entomology. These disciplines account for approximately 30 percent of the total undergraduate student contact hours in the second and third years. The department gives more emphasis to theoretical and laboratory study which complements the "applied" approach of Crop Science. Much of departmental research focuses on minor crops and inter-cropping for food and feed production.

3. Agricultural Chemistry - Soil Science and Food Science are the two foci of this department. Courses cover 1) the principles and fundamentals of soil science - including chemical, physical and biological properties - plant nutrition, the nature of soil fertility and soil genesis, classification and survey, digestive processes in farm animals, feed analysis, dairy chemistry and milk products, methods of soil survey, soil analysis, soil fertility and soil management in the tropics; and 2) food science and technology, population and food problems, principles of food processing and preservation, changes in composition of foods, contamination of food and its control, and food standards. At the PGIA, the major emphasis is on the food sciences.

4. Agricultural Economics & Outreach - comprises the disciplines of 1) agricultural economics with related areas of agricultural development, farm management, agricultural business management and marketing and 2) agricultural extension and communications; and 3) rural sociology. The Mathematics and Statistics courses are common to all undergraduate courses of study. It is anticipated that about 26 percent of PGIA students will enroll in Agricultural Economics and farm management courses. The Extension and Outreach programs have been proposed as a separate Board of Studies with a permanent head to accommodate the rapidly expanding PGIA/Faculty emphasis on outreach programs that will coordinate all Department efforts to serve Sri Lankan communities.

5. Animal Husbandry - the second basic department of the Faculty of Agriculture. Animal Husbandry plays three major roles: 1) teaching to create awareness among all students in the Faculty of Agriculture of the importance of animals to the country's welfare, by offering specialized training at the undergraduate level in animal production; 2) research on the relevant problems of the livestock industry; and 3) collaboration with the Department of Animal Production and Health of the Ministry of Agriculture in development of feeding and management systems for field use.

In addition to teaching the courses in the Faculty of Agriculture the AH staff spends about 330 hours per year giving animal husbandry training to the students of the Veterinary School.

6. Agricultural Engineering - offers an undergraduate program involving engineering, science, farm power and machinery, soil and water conservation, environmental control and product processing. Emphasis on appropriate technology related to water management, waste utilization and environmental control will be strengthened by additional staff being trained overseas.

Short term diploma courses of three months to one year duration for high school/graduates are planned to meet urgent needs of Sri Lanka at the technician level. The first course to be offered will comprise a six month program in water management to meet the needs of the Mahaweli Development Project.

#### I. AED Recommended Inputs vs. Final Design Inputs

AED's recommendations for inputs to the Faculty and PGIA were reviewed by USAID and the Faculty staff and modified somewhat in the final design of the project. The differences, which are fairly minimal are as follows:

1. Visiting Professors - AED recommended 12 long term professors at a total of 288 person months. The project provides for 11 long term people (four provided by other donors) including a team leader for a total of 252 person months. The project figure includes home office support. AED recommended 156 months of short term assistance. The project provides 130 months.

2. Training (Core Staff) - AED recommended that 52 people be trained, half of whom would have full time training in the U.S. AED added funds for an assumption of 20% attrition. Total cost was estimated at \$ 2,921,000. The project provides for AID financed training of 38 participants, none of whom are expected to require full time training in the U.S. and other donor training of 12 participants for a total of 50 participants. Less training is included than AED noted since some staff are already in training and attrition is expected to be less than 20%.

3. U.S. Graduate Students - AED recommended the project fund 5 U.S. graduate students in Sri Lanka over the life of the project. This was found not to be germane to the project purpose by both USAID and the GSL and has been deleted.

4. Facilities, Equipment and Vehicles - AED estimated these requirements to total \$ 1,349,000. Refined estimates total \$ 1,540,000. The amount attributed to library development is the same.

5. Building Requirements - These are essentially in agreement between the AED report and the project as designed.

## PART III Project Analysis

### B. Social Analysis

The relationship of PGIA and the Faculty to the ultimate beneficiaries of the project - small farmers and the rural poor through projects to be planned and implemented in the agriculture sector has been covered in other sections of this paper. This section of the paper notes briefly three social related aspects of the project: the source of students, the role of women and the prospects for staff recruitment and retention.

#### 1. Source of Students

Historically, a very high percentage of students in the Agriculture Faculty of the University have come from middle and upper class families in the urban areas. Primarily this has been due to the greater emphasis placed on a higher education by these families and particularly the greater access to prerequisite science training in secondary schools in urban areas as opposed to rural areas. The University reports that the percentage of rural students in the Faculty has increased in recent years. However the ratio is not likely to change drastically until there is greater emphasis on science teaching in rural secondary schools. In an effort to increase the rural agricultural student body the GSL, as part of an overall effort to provide more educational opportunities, plans to establish more University training in several of the outlying areas. These new planned institutions include formal agricultural training initially for a two year program and should over time increase the ratio of students with a rural background in the agricultural faculty. Since PGIA and the Faculty draw their staff from the undergraduate body the staff in the near term will come from primarily an urban background. Because of this there is heavy emphasis during training on practical farm experience.

Costs do not appear to be a major factor inhibiting attendance by rural people at the University or at PGIA. Low cost education loans are available to all successful applicants and fees are minimal. A USAID suggestion that the project include a scholarship fund was not accepted by the Faculty since it was thought to be unnecessary.

#### 2. Women in Agriculture

Although quantitative data on the proportion of women in the existing stock of agricultural personnel proved difficult to obtain, the evidence suggests that it is significant. With respect to future supplies, 18 percent of the present PGIA postgraduate students and 24 percent of the Faculty's undergraduate students are women. Typically women account for about 25 percent of the diploma-level and 25 to 30 percent of the practical farm school students. Over 10 percent of the Faculty/PGIA staff are women.

### 3. Staff Retention and Recruitment

Positions on the professional staff of the University are avidly sought and carry great prestige. Salaries are equal to or better than other public sector organizations. The opportunity for a periodic paid sabbatical leave including full air passage for employee and spouse, coupled with the time for paid work in addition to a University position results in little voluntary turnover in professional staff. Since new hires are guaranteed a position and since planned Ph.D. training involves a minimal period abroad and is closely tied to problems and research in Sri Lanka it is thought that drop-outs during training will be minimal. The requirement to post a bond will further limit dropouts although admittedly if a trainee found a job abroad the bond could be paid without a great deal of strain.

PART III C. Economic Analysis

AED did a least cost analysis of alternative means of providing trained personnel. This analysis is included in part three of the technical analysis. The analysis showed that even if indigenous training required one year abroad the costs of training all requirements abroad was slightly more than the costs of training locally. If local training did not require any time abroad the costs of training locally would be significantly less. The project is the least cost alternative of meeting the demand. In addition local training is far more relevant and has a greater chance of retaining trained personnel than training abroad.

D. Environmental Analysis

The project will have an impact on the environment only in so far as buildings funded by the GSL and improvements to experimental farms are concerned. A negative determination is recommended.

PART III E. Administrative Analysis

AED examined the administration of the PGIA and at least partially of the Faculty in their report on pages 153-167. AED found the organizational structure and operational procedures sound. In fact however the administration is geared to a much smaller scale of operation than that envisioned in the project and therefore a number of changes are necessary if the project is to be successfully implemented in the time frame envisioned. These changes include and are in addition to those recommended by AED.

1. Current PGIA staff consists of an assistant registrar and one or two secretaries. Several additional positions have been approved but a two step approval process requiring approval from the University and approval from Colombo to not only establish additional positions but also to recruit for additional positions has resulted in approved positions for such essential positions as an assistant treasurer and a senior assistant registrar being vacant for a long period of time. To effectively implement the project approximately 39 additional blue collar, clerical and sub-professional staff are required. Current staff is approximately 4. Agreement to approve and recruit such staff is included as a condition precedent in the Project Agreement.

2. Faculty positions also require approval from Colombo to establish positions and to recruit for positions. The necessary positions for 1977 and 1978 have been approved but no authority to recruit for additional positions has been provided. Consequently approved positions which are needed now have been vacant for many months. A precondition to initial disbursement must be approval of the necessary positions and authority to recruit for these positions.

3. GSL policies inhibit overseas training of newly recruited personnel requiring technically 3 years of service before overseas training is authorized which in practice is sometimes shortened to one year of service. Continuation of this ruling would mean recognized staff cannot possibly be recruited and trained within the time frame of the project. An exception to this procedure must be included as a condition in the project agreement which would permit staff to depart for training when the project director deems it appropriate without regard to length of service.

4. Building approval and construction requires a lengthy multi-step approval procedure and the involvement of state construction entitees which if continued practically guarantees required facilities will not be available when needed. A precondition to disbursement must provide for approval of necessary facilities and a condition must permit PGIA to hire a consulting firm to advise on and design facilities as well as to prepare tender documents to provide for construction of such facilities either by the public or private sector.

5. The positions of Dean of the Faculty of Agriculture and Director of PGIA have been vacant for 5 months. A precondition to disbursement must be appointment of a Dean and PGIA Director.
6. PGIA and the Faculty have little experience in ordering equipment. This requires substantial assistance from AID and through AID funding, a host country contract. Thus additional AID staff and a competent active team leader are required.
7. The operation of demonstration farms and related research is divided among many departments of the Faculty. This limits access to, and operation and development of the farms. The responsibility for this operation must be centralized and be under the control of the Dean/Director. The Faculty has agreed to such centralization. The appointment of a Farm Manager is a pre-condition to disbursements.
8. The Faculty depends on the Registrar services of the University. It is likely that with the significant increase in undergraduate enrollment the Faculty will require a full time Assistant Registrar.
9. Neither PGIA nor the Faculty have the staff to provide services such as housing, maintenance, etc. to expatriate visiting staff. The contract to provide this technical assistance should provide for the contractor to supply such services. The Faculty can operate a common motor pool.

#### PART III F. Financial Analysis

##### 1. PGIA/Faculty Financial Base and Required Support

The University of Sri Lanka is the principal source of operating funds for both the Faculty of Agriculture and the PGIA. However, significant support is also currently received from national and international sources for research, postgraduate fellowships, books and periodicals. Both Faculty of Agriculture and PGIA budgets must be taken into consideration in any examination of the financial situation due to the shared use of facilities, equipment and staff.

##### A. PGIA budget process

The Boards of Study prepare annual plans for the courses, both continuing and new, that will be offered during the following year. The plans are submitted to the Academic Syndicate for approval. The Assistant Registrar then prepares a budget, which is reviewed by the Director before transmittal to the Council of Management for approval.

The Council forwards the budget to the University Vice Chancellor <sup>1/</sup> for review and action. From the Vice Chancellor, the budget is transmitted to the Ministry of Education for final action. The budget may

<sup>1/</sup> This system is subject to change under a new University Bill.

be modified at any of the above points; typically, reductions are made from the initial request.

#### B. The PGIA budget

The approved 1978 operating budget for the PGIA is Rs.465,318, more than two and a half times the budget for 1976. The increase in support over this period is made even more striking by the fact that nearly half of the 1976 budget was allocated for purchase of office furniture and equipment.

One half or less of the total budget for these years has been for salaries and allowances. This low proportion is possible because basic salaries for all teaching staff are borne by the Faculty of Agriculture, other faculties of the University or governmental agencies.

Operating budgets for the PGIA, 1976-78.

Budget Item	1976*	1977	1978
Salaries & allowances	\$ 69,793	\$154,080	\$176,356
Retirement benefits	826	1,770	1,962
Travel expenses	10,607	10,000	12,000
Supplies	9,096	40,650	90,000
Repair and maintenance of capital assets	-	5,000	7,000
Communications, utilities and other services	5,520	40,000	76,000
Office furniture and equipment	80,232	10,000	-
Books	-	13,000	50,000
Counterpart funds, foreign aid projects	-	-	50,000
Miscellaneous	-	500	2,000
<b>Total</b>	<b>\$176,082</b>	<b>\$275,000</b>	<b>\$465,318</b>

#### \* Actual expenditures

In addition to core funding from the University of Sri Lanka, the PGIA receives support from the Ministries of Agriculture and Plantation Industries, the National Science Council, private sector, and external sources. Total outside support received in 1977 totaled Rs.399,900, distributed as shows below. Since Rs. 238,400 of that amount was in two year grants, the net amount available for 1977 may be considered to be Rs.280,700.

Grants/research funds received by the PGIA in 1977 in addition to its allocation from the University of Sri Lanka.

Source	Amount
	Rs
Ministry of Agriculture grant	50,000/-
Ministry of Plantation Industries grant	50,000/-
National Science Council (Studentships, M.Phil. program)	108,000/- (2 yrs)
Ceylon Tobacco Co. Ltd. (Studentships, M.Phil. program)	90,800/- (2 yrs)
Lever Brothers Ltd. (Studentship, M.Phil. program)	39,600/- (2 yrs)
British Council (Support for books and periodicals)	52,500/-
SEARCA (Support for workshop on research management)	9,000/-
Total	\$399,900

Assuming that support will be forthcoming in 1978 at the same level as in 1977, the total funds available to the PGIA for 1978 will amount to Rs.746,018.

#### C. The Faculty of Agriculture budget

The Faculty of Agriculture receives its funds through the office of the President of the Peradeniya Campus rather than directly through the Vice Chancellor. Allocations in 1977 were about 20 percent greater than operating expenditures for the previous year, and the 1978 operating budget is about 15 percent higher than for 1977.

In addition to the above core funding, the Faculty of Agriculture received additional support in 1977 from outside sources which amounted to a total of Rs.238,900, distributed as shown below. Since Rs.100,000 of that amount was in a two year grant, the net amount available for 1977 may be considered to be Rs.350,900.

## Faculty of Agriculture expenditures, 1973-78

Year	Expenditures	
	Operating	Capital
	Rs	Rs
1973	970,000*	485,815
1974	1,138,225*	382,405
1975	1,562,832	210,902
1976	1,427,973	271,857
1977	1,746,250*	748,608*
1978	2,058,549*	NA

## \* Allocations

Assuming that 1978 outside support will be maintained at the same level as in 1977, total operating funds available to the Faculty of Agriculture in 1978 will amount to Rs.2,409,449.

Grants/research funds received by the Faculty of Agriculture in 1977 in addition to its cored funding from the University of Sri Lanka

Source	Amount
	Rs
(1) World Food Program grant	100,000/- (2 years)
Department of Agriculture	50,000/- (Annual)
Department of Minor Export Crops (2)	12,000/-
National Science Council (3)	83,000/-
University grant	15,000/-
M.A.B. project - UNESCO (4)	85,900/-
Tea Research Institute grant (5)	17,000/-
PL 480 grant (agricultural economics)	38,000/-
Total	\$400,900/-

- (1) Research on maize, sorghum, manioc, and soybean.  
 (2) Research on citronella, lemon grass.  
 (3) Grants to individual staff members.  
 (4) Pasture development  
 (5) Use of tea refuse

D. Future Requirements of PGIA and the Faculty

The following tables show in detail and summary form the anticipated future financing of PGIA and the Faculty of Agriculture that will be required if the expansion to be financed by the project is to be accomplished. The tables show that PGIA's operating budget must grow at least 4.5%/year and that the Faculty's operating budget must grow 7.5%/year. A sizeable investment in the capital budget is necessary for facility expansion. Given the increases prevailing over the past few years the incremental amounts required are reasonable.

OPERATING BUDGETS FOR PGIA AND FACULTY OF AGRICULTURE 1976 - 1985 (Rs.000)

A. Faculty of Agriculture

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1. Academic Salaries & Allowances	1052	1403	1610	1615	1620	1625	1630	1650	1675	1750
2. Retirement Benefits	86	122	160	189	200	200	200	210	220	225
3. Travel Expense	18	10	15	25	30	35	40	45	50	50
4. Supplies	177	183	186	200	225	250	275	300	325	350
5. Repair & Maintenance of Capital Assets	7	6	6	10	30	50	70	80	90	100
6. Communications, Utilities & Other Services	49	12	13	15	17	20	22	24	25	25
7. Office Furniture and Equipment	39	10	-	20	20	20	20	20	20	20
8. Books	22	25	25	50	75	100	125	150	175	200
9. Misc.	10	10	10	10	10	10	10	10	10	10
Subtotal	1460	1781	2025	2125	2227	2310	2392	2489	2590	2730
10. Inflation	-	-	202.5	213	222	231	239	249	259	273
Subtotal	1460	1781	2227.5	2338	2449	2541	2531	2738	2849	3003
11. Non professional staff	438	534	668	701	735	762	789	821	854	900
Total	1898	2315	2895	3039	3184	3303	3420	3559	3703	3903

B. PGIA

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1. Academic Salaries & Allowances	70	164	176	166	210	226	234	241	250	258
2. Retirement Benefits	1	2	2	15	26	28	29	30	31	31
3. Travel Expense	11	10	12	25	30	32	34	36	38	40
4. Supplies	9	41	90	50	55	60	65	70	75	80
5. Repair & Maintenance of Capital Assets	-	5	7	10	15	20	20	20	20	20
6. Communications, Utilities & Other Services	6	40	76	45	50	50	50	50	50	50
7. Office Furniture and Equipment	80	10	-	10	8	5	4	3	3	3
8. Books	-	13	50	50	50	50	50	50	40	300
9. Misc.	-	0.5	52	5	5	5	5	5	5	5
Subtotal	176	285	465	431	519	550	565	580	584	590
10. Inflation (15%)	-	-	70	65	78	83	85	87	88	89
Subtotal	-	-	535	496	597	633	659	660	672	679
11. New Buildings	-	-	-	25	10	5	-	-	-	-
12. Inflation (7%)	-	-	-	2	1	-	-	-	-	-
13. Contingency (5%)	-	-	27	26	30	32	33	33	34	34
Sub total	-	-	27	93	41	37	33	33	34	34
Sub total	-	-	562	549	638	670	692	693	706	713
Admin staff	-	-	89	236	306	328	337	345	354	363
Total	176	285	651	785	944	998	1029	1038	1060	1076

PROJECTED PGIA AND AG FACULTY OPERATING BUDGETS (Rs.000)

	FACULTY	PGIA
1976	1898	176
77	2315	285
78	2895	651
79	3039	785
80	3184	944
81	3303	998
82	3420	1029
83	3559	1038
84	3703	1060
85	3903	1076

BUILDING PROGRAM  
(CONSTRUCTION & FURNITURE)

On Campus	Rs.10,151,000
Off Campus (Farms)	<u>5,078,000</u>
Total	Rs.15,229,000

## E. Capital Plant and Required Expansion

The PGIA has, until now, had to rely largely on facilities and equipment of the Faculty of Agriculture. Even after completion of the new PGIA building, the major portion of postgraduate teaching and research is carried out in Faculty facilities. Thus, as in the case of the budget, both PGIA and Faculty facilities must be taken into consideration in examining present and future space adequacy and value.

### 1. Present

The Faculty of Agriculture currently has about 51,000 sq.ft. of permanent building facilities at Peradeniya and 23,000 sq.ft. at the Maha Illuppallama unit for first year students. At an estimated replacement value of Rs.130 per gross square feet for construction, fittings and furniture, the total current value of Peradeniya facilities is approximately Rs.6.65 million, and that of the Maha Illuppallama unit is about Rs. 3 million or a grand total of Rs.9.65 million for the two facilities combined. The current value of Faculty of Agriculture equipment at the Peradeniya campus is estimated at Rs.4.75 million, with additional equipment valued at Rs.500,000 being located at Maha Illuppallama.

In addition to the above, the Faculty of Agriculture has three farms: Dodangolla with 205 acres, Meewatura with 24 acres, and Maha Illuppallama with 40 acres. Current values of these farms were not determined.

### 2. Projected

The Postgraduate Institute and the Faculty of Agriculture are engaged in an active building program and are developing plans for additional facilities. The cost of additional required facilities including furnishings is estimated at Rs.10 million for on campus buildings and Rs.5 million for off campus (farm) structures.

Buildings recently completed, under construction, or proposed,  
PGIA and Faculty of Agriculture (on Campus).

Building	Status	Gross sq.ft.	Cost <sup>(1)</sup>
			Rs.
PGIA Admin/Lib	Completion expected Dec. 1977	18,000	2,200,000
Agric. Economics & Extension	Funds allocated; construction to start 1978	4,900	275,000
Agric. Engineering Phase I	Completed 1977	5,200	225,000
Phase II	Under construction: completion 1978	7,500	375,000
Field Lab.	Proposed	2,000	260,000
Central Workshop	Proposed	4,000	400,000
Agric. Biology			
Laboratory	Proposed	14,000	990,000
Greenhouse	Proposed	1,200	100,000
Insectory	Proposed	1,200	100,000
Agric. Chemistry	Proposed	16,000	1,100,000
Animal Husbandry			
Nutrition Lab.	Proposed	14,000	1,000,000
Animal Unit	Proposed	8,000	420,000
An. Prod./Processing	Proposed	4,000	250,000
Crop Science			
Renovation of Agric. Faculty Bldg.	Proposed	21,000	800,000 <sup>(2)</sup>

(1) Includes furniture and fittings for all new buildings, and some equipment for agricultural engineering. (These figures have been revised since this table was prepared.)

(2) Estimated.

Included in the additional requirements are plans to convert the present agricultural biology building into a centralized teaching facility to accommodate the expected increase in undergraduate enrollment.

The PGIA building contains offices for the administrative staff, a large meeting room suitable for conferences and classes, two lecture rooms, a statistical and computer facility, and the new postgraduate library.

Funds for the agricultural economics building are allocated, but bids for the contract have not yet been received. This building is expected to have sufficient space for both agricultural economics and extension activities, including space for the expanded staff to be included in this unit.

The Department of Agricultural Engineering divided construction of their new facility for offices and teaching space into two phases. The second phase will soon be completed. All other building plans are in the proposal stage and are described in the 5 year plan. There are, as yet, no commitments from the University or other sources to provide funds for construction of new buildings or renovation of the existing buildings other than those cited above.

The PGIA and the Faculty of Agriculture have been successful in getting funds for several new buildings. These, and the proposed new buildings with classrooms and modern teaching and research laboratories, are essential for the successful development of the postgraduate training program. Relatively substantial funds for new construction are required if expansion is to occur. An agreement to provide these funds is included in the loan agreement.

## 2. Budget Tables

The following pages show the summary cost estimate and financial plan, the costing of project inputs and outputs, the summary AID foreign exchange budget, and detailed budgets supporting the summary budget.

### SUMMARY COST ESTIMATE AND FINANCIAL PLAN ( US \$ 000)

Use/Source	AID**		Host Country		Other(s)+		Total
	FX	LC	FX	IC	FX	IC	
Technical Assistance	2456	87			669		3222
Training	1868				545		2413
Library Dev.	375						375
Equipment & Vehicles	1165						1165
Operating Expenses				2162			2162
Construction & Furn.				952			952
Miscellaneous	39						39
<b>Total</b>	<b>5913</b>	<b>87</b>		<b>3114</b>	<b>1214</b>		<b>10,328</b>

### COSTING OF PROJECT OUTPUTS/INPUTS (\$ 000)

Project Inputs <sup>2/</sup>	Project Outputs <sup>1/</sup>				TOTAL
	# 1	# 2	# 3	# 4	
AID Appropriated	2758	1540	851	851	6000
Host Country	540	1493	540	540	3113
Other Donors *	768	-	223	223	1214
<b>Total</b>	<b>4066</b>	<b>3033</b>	<b>1614</b>	<b>1614</b>	<b>10,327</b>

1. #1 = Trained Faculty  
 #2 = Adequate Facilities  
 #3 = Operating research/outreach programs  
 #4 = Curriculum developed & utilized.
2. The cost of technical assistance was apportioned equally to #1, #3, and #4. The cost of operating expenses was attributed equally to all outputs.

**SUMMARY - AID ASSISTANCE BUDGET 1/**  
(in US \$ 000)

1. Technical Assistance	2,553,420
2. Training	1,867,894
3. Equipment	969,229
4. Library	375,000
5. Vehicles	195,500
6. Staff travel per diem	9,000
7. Dean/Dir. U.S. supervisory visits	11,000
<b>Total</b>	<b>5,981,043</b>
	Say 6,000,000

1/ Inflation and contingencies are built into the detailed budgets and therefore are not shown separately in the summary budget.

TECHNICAL ASSISTANCE BUDGET

This budget is based on 1978 prices for recurring and non-recurring expenses. The estimated cost of each technical advisor and related expenses has been adjusted upward by an inflation factor of 10% per year. Thus the costs of a person for an amount of time in 1980 are assumed to be 20% more than the costs of a person for a similar amount of time in 1978. The underbudgeting which results for non-cumulative inflation increases (ie. 1980 = 1978 + 20% (1978) instead of 1980 = (1978 + 10%) 10% + 1978 is balanced by an assumption that actual inflation will be less than 10%/year. In addition long term T.A. has a built in inflation factor of 10%/year during their tour. Since these inflation factors are built into each T.A. position no overall inflation factor is added to the budget.

1978 costs were determined as follows :

## A. One Month Visit

Base salary	2,500
Per diem	660
Fringe (18%)	450
Air fare	1,300
Medical	<u>100</u>
	5,010

One Month Visit = \$ 5,010

## B. Two Month Visit

Base salary	5,000
Per diem	1,300
Fringe	900
Air fare	1,300
Medical	<u>100</u>
	8,600

One Two Month Visit = \$ 8,600

## C. Three Month Visit

Recurring

Base salary	2,500
Differential	500
Fringe (18%)	<u>450</u>
	3,450

Non Recurring

Air fare	1,300 (excursion)
Air freight	800
Per diem	200
Medical	<u>100</u>

2,400

One Three Month Visit = 3(3,450) + 2,400 = \$ 10,350

## D. Four Month Visit

Calculated on the same basis as a three month visit with an extra month of recurring costs and additional air fare of \$ 400 since excursion rates may not be applicable.

One Four Month Visit =  $3,450 \times 4 + 2,800 = \$ 16,600$

## E. Five Month Visit

Calculated on same basis as four month visit plus extra month of recurring costs.

One Five Month Visit =  $3450 \times 5 + 2,800 = \$ 20,050$

## F. Six Month Visit

Calculated on same basis as five month visit with extra month of recurring costs an additional air freight allowance of \$ 200.

One Six Month Visit = \$ 23,700

## G. One Year Visit

(Assume family of 4, one under 12, one in U.S. School)

Base salary	30,000	Medical	300
Differential	6,000	Travel (2-1/2)	4,300
Fringe (18%)	<u>4,800</u>	Shipment effects	
	40,800	Educ.allow.	20,000
		Educ. Tul.	<u>1,050</u>
			27,150

One One Year Tour = \$ 67,950

## H. Eighteen Month Visit

(Same family assumption as G)

Base salary	45,000	Medical	300
Differential	<u>9,000</u>	Travel	4,300
Fringe (18%)	<u>2,200</u>	Shipment	20,000
	61,200	Educ.allow.	1,575
		Educ.Tul.	<u>3,000</u>
			29,175

One Eighteen Month Visit = \$ 90,375

## I. Two Year Visit

(Same family assumption as G)

Base salary	63,000	Travel	4,515
Differential	12,600	Shipment	21,000
Fringe (18%)	<u>11,340</u>	Medical	300
	86,940	Educ.allow.	2,205
		Educ.Tul.	<u>3,150</u>
			31,170

One Two Year Tour = \$ 118,110

## J. Thirty Month Tour

(Same family assumption as G)

Base salary	99,300	Travel	9,700
Differential	19,860	(including home-	
Fringe (18%)	<u>17,875</u>	leave)	
	137,035	Shipment	23,600
		Educ.allow.	3,500
		Educ.Tul.	5,000
		R + R (2)	4,125
		Medical	<u>300</u>
			46,225

One Thirty Month Tour = \$ 183,260

**AID FINANCED TECHNICAL ASSISTANCE (\$000)**  
 (Figures in parenthesis indicate other donor financed and are non-additive)

<u>Length of Tour</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
<b>1. One Month</b>									
A) No. 4	-	-	-	-	1	1	1	1	
B) Base salary 2500	-	-	-	-	3.5	3.8	4.0	4.3	
C) Total inc.base salary 5010	-	-	-	-	7.0	7.5	8.0	8.5	
<b>2. Two Month</b>									
A) No. 4	-	1	1	-	1	1	-	-	67
B) Base salary 5000	-	5.5	6.0	-	7.0	7.5	-	-	
C) Total inc.base salary 8600	-	9.5	10.3	-	12.0	12.9	-	-	
<b>3. Three Month</b>									
A) No. 28	-	6	7	7	4	4	-	-	
B) Base salary 7500	-	49.5	63.0	68.3	42.0	45.0	-	-	
C) Total inc.base salary 10,350	-	68.3	86.9	94.2	58.0	62.1	-	-	

<u>Length of Tour</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
<b>4. Four Month</b>									
A) No. 3	1	1	1	-	-	-	-	-	
B) Base salary 10,000	10.0	11.0	12.0	-	-	-	-	-	
C) Total inc.base salary 16,600	16.6	18.3	19.9	-	-	-	-	-	
<b>5. Five Month</b>									
A) No. 2	-	-	1	-	1	-	-	-	
B) Base salary 12,500	-	-	15.0	-	17.5	-	-	-	
C) Total inc.base salary 20,050	-	-	24.1	-	28.1	-	-	-	
<b>6. Six Month</b>									
A) No. 2	-	-	-	1	1	-	-	-	
B) Base salary 15,000	-	-	-	19.5	21.0	-	-	-	
C) Total inc.base salary 23,700	-	-	-	30.8	33.2	-	-	-	

<u>Length of Tour</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
<b>7. One Year</b>									
A) No. 1 (1)	-	-	1	-	(1)	-	-	-	
B) Base salary 30,000	-	-	36.0	-	(42.0)	-	-	-	
C) Total inc.base salary 67,950	-	-	81.5	-	(95.1)	-	-	-	
<b>8. Eighteen Month</b>									
A) No. 1	-	-	-	1	-	-	-	-	
B) Base salary 45,000	-	-	-	58.5	-	-	-	-	
C) Total inc.base salary 90,375	-	-	-	117.5	-	-	-	-	
<b>9. Two Year</b>									
A) No. 3 (3)	-	2(1)	1(2)	-	-	-	-	-	
B) Base salary 63,000	-	138.6 (69.3)	75.6 (151.2)	-	-	-	-	-	
C) Total inc.base salary 118,110	-	259.8 (129.9)	141.7 (283.5)	-	-	-	-	-	

<u>Length of Tour</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
10. Thirty Month									
A) No. 1	-	1	-	-	-	-	-	-	
B) Base salary 99,300	-	109.2	-	-	-	-	-	-	
C) Total inc.base salary 183,260	-	201.6	-	-	-	-	-	-	
11. Total Base Salary	10.0	313.8	207.6	146.3	91.0	56.3	4.0	4.3	
12. Overhead 40% Base	4.0	125.5	83.0	58.5	36.4	22.5	1.6	1.7	
13. Total Costs w/o Overhead	16.6	557.5	364.5	242.5	138.3	82.5	8.0	8.5	
14. Total costs with Overhead (12+13)	20.6	683.0	447.6	301.0	174.7	105.0	9.6	10.2	1,751.6
15. In Country Support	-	51.9	29.7	4.8	-	-	-	-	86.5

<u>Length of Tour</u>			<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
16.	Home Office Support										
	A) Professional	1. Salary 25,000	-	27.5	60.0	32.5	35.0	37.5			
		2. Fringe 18% 4,500	-	5.0	10.8	5.9	6.3	6.8			
		3. No.	-	1	2	1	1	1	-	-	
	B) Clerical	1. Salary 14,000	-	15.4	33.6	18.2	19.6	21.0			
		2. Fringe 18% 2,520	-	2.8	6.0	3.3	3.5	3.8			
		3. No.	-	1	2	1	1	1	-	-	
	Home Office Summary										
	C) Salary		-	42.9	93.6	50.7	54.6	58.5			
	D) Overhead 50%		-	21.5	46.8	25.4	27.3	29.3	-	-	
	E) Fringe (18%)		-	7.7	16.8	9.1	9.8	10.5	-	-	
	F) Total Home Office Support		0	72.1	157.2	85.2	91.7	98.3	0	0	504.5
17.	Sub Total (14 + 15 + 16)		20.6	807.0	634.5	391.0	266.4	203.3	9.6	10.2	2,342.6
18.	Fee (9%)		1.9	72.6	57.1	35.2	23.9	18.3	0.86	0.92	210.8
19.	Total		22.5	879.6	691.6	426.2	290.4	221.6	10.5	11.1	2,553.4

1/ Estimated costs of other donor financed academic technical assistance when figured on the same basis as U.S. assistance are 1979 - \$ 171,829; 1980 - \$ 374,899; 1981 - \$ 122,004; Total - \$ 668,732.

In reality these costs are likely to be somewhat less.

2/ Includes four three month visits, one each 1979-1982, for unanticipated academic requirements.

Figures may not add due to rounding.



TRAINING BUDGET

The training budget is based on the requirement for U.S. financed training of 38 people as shown on the following table of training requirements. (Other donors are assumed to finance an additional 12 trainees). Twenty-one of the 38 are due to begin training in 1979 and 17 begin training in 1980. Although the training plan calls for trainees to spend 2 years in the U.S., 1-1/2 years in Sri Lanka on research, and a final 6 months thesis preparation in the U.S., allowance has been made for four trainees to do all their work in 4-1/2 years in the U.S. should this be required due to problems with arranging a suitable research program in Sri Lanka.

Trainee costs were based on an estimated 1978 cost of \$ 11,400/yr. These costs were assumed to inflate 10% year during training. A trainee beginning in 1979 was thus estimated at 11,400 + 10% for the first year, 11,400 + 20% for the second year. Two round trip airfares were included for trainees doing research in Sri Lanka. One RT airfare was included for trainees not returning to Sri Lanka for research. An additional amount of \$ 3,000 was added for each trainee doing research in Sri Lanka for the purpose of research related materials, equipment, travel and particularly extensive communication with research supervisors who may be in the U.S.

All training in U.S.:

$$11,400 + 12,540 + 13,680 + 14,820 + 7,980 + 2,000 = \$ 62,420$$

Training in U.S., Research in Sri Lanka:

$$11,400 + 12,540 + 7,410 + 4,000(AF) + 3,000 = 38,350$$

1979 Departures

$$\begin{array}{rcl} 38,350 + 3,835 \times 19 & = & 801,515 \\ 62,420 + 6,242 \times 2 & = & 137,324 \end{array}$$

1980 Departures

$$\begin{array}{rcl} 38,350 + 3,835 + 3,835 \times 15 & = & 690,300 \\ 62,420 + 6,242 + 6,242 \times 2 & = & 149,808 \end{array}$$

$$\text{Sub- Total Training Costs} = 1,778,947$$

$$\text{Fee \% 5\%} = 88,947$$

$$\text{Total Training Costs (U.S.)} = \$ 1,867,894$$

**Estimated value of other donor financed training costs  
(based on same as U.S. training costs - excludes those  
currently in training)**

1979

$$38,350 + 3,835 \times 3 = 126,555$$

1980

$$38,350 + 3,835 + 3,835 \times 8 = 368,160$$

1981

$$38,350 + 3,835 + 3,835 + 3,835 \times 1 = 49,855$$

$$\text{Total other donor training} = 544,570$$

$$\text{Total U.S. financed training} = \$ \underline{1,867,894}$$

$$\$ 2,412,464$$

EQUIPMENT BUDGET <sup>1/</sup>

Crop Science	109,070
Agricultural Biology	104,947
Agricultural Chemistry	88,642
Economics/Outreach	70,700
Animal Husbandry	110,477
Agricultural Engineering	80,734
Library	9,700
Farm Development	<u>55,100</u>
Sub Total	629,370
Inflation (10%)	62,937
Sub Total	692,307
Shipping 40%	<u>276,922</u>
Total	969,229

<sup>1/</sup> Detailed equipment and supply lists were prepared by the various Faculty Departments based on their assessment of their needs and the recommendations of the AED project analysis team. The lists were reviewed by the AID project development team. Prices were obtained primarily from 1977/78 catalogues. A copy of the itemized lists including nomenclature, catalogue numbers, quantity and price is available for review in ASIA/PD. Since the itemized list runs to 57 pages it was decided not to include it in the P.P.

## STAFF TRAVEL PER DIEM BUDGET

The purpose of this funding category is to permit academic staff of PGIA and the Faculty of Agriculture to extend for short periods of time the length of travel funded outside the project by the GSL or other donors. This is to permit staff the opportunity to review research or academically related matters in greater depth at the traveller's destination or to stop en route to or from such destinations for such purposes. It responds to the needs expressed by many of the faculty to have a few extra days on various trips for such discussions. Funds would be for per diem only. Typical use might be:

IRRI holds a seminar in Los Banos and invited a faculty member to present a paper. IRRI funds travel and per diem for three days. Project funds could provide four extra days per diem for discussions in the Philippines or say Singapore. A waiver is sought for use of grant funds for this purpose outside the U.S. It is felt sizeable benefits can be gained for relatively small expenditures.

Budget:

6 trips x 5 days per diem x 6 years x \$50 = \$ 9,000.

LIBRARY EQUIPMENT

2 Microfilm reading machines	\$ 2,400
8 Microfiche reading machines	2,800
2 Air conditioning units (to be used alternately)	1,500
Cabinets for microfiche/films	1,000
Minor equipment needs	1,500
Maintenance supplies	<u>500</u>
	\$ 9,700

<u>VEHICLE BUDGET</u>							(in US \$)
<u>Type</u>	<u>Probable Source</u>	<u>Quantity</u>	<u>Unit Cost CIF</u>	<u>Sub Total</u>	<u>20% Spares</u>	<u>Total</u>	
Jeep, diesel 4 wheel drive	US	10	8,000	80,000	20,000	100,000	
Trail bikes 100 cc	Japan	7	600	4,200	Local cost	4,200	
Mini Bus 12 passenger	Japan	2	5,500	11,000	2,200	13,200	
Bus, diesel 34 passenger	Iddia	2	15,000	30,000	6,000	36,000	
Pick up truck double cab	Japan	1	5,500	5,500	1,100	6,600	
2-3 ton stake truck	Japan	1	8,000	8,000	2,000	10,000	
Sub Total						170,000	
Contingency 5%						8,500	
Inflation 10%						<u>17,000</u>	
						195,500	

DEAN/DIRECTOR TRAVEL BUDGET

Funds to permit PGIA Director/Faculty Dean to make four annual trips to contractor office/campuses with faculty training to review progress/problems.

$$20 \text{ days} \times 50/\text{day} \times 4 \text{ years} + (2,500 \times 4 \text{ air fare}) = 11,000$$



LIBRARY BUDGET 1/

	<u>Books</u>	<u>Journals</u>	<u>Backfiles or Film/Fiche</u>	<u>\$</u>
1979	2,000	25	10	40,900
1980	2,000	50	20	42,200
1981	3,000	25	20	61,000
1982	5,000	25	20	101,000
1983	<u>6,000</u>	<u>40</u>	<u>20</u>	<u>121,800</u>
	18,000	165	90	366,900
	Special subscription services/unatributed			<u>8,200</u>
	Total			375,000

1/ Based on pg 146 AED PGIA Assessment Dec. 1977.

## PART IV PROJECT IMPLEMENTATION

### 1. Schedule

This implementation plan has been developed by USAID and the Faculty of Agriculture to tie together the time phased provision of inputs to produce the key outputs of trained staff and adequate facilities that will enable an orderly expansion of PGIA and Faculty enrollment - and thus an increasing number of indigenously trained personnel in Agriculture. The plan takes into account such things as additional physical facilities that will be required, when they are needed and the time it takes to construct them; when visiting staff are required both to teach courses during the absence of others and to supervise trainee in-country research; when additional staff can be recruited, how soon they can depart for training and when they are likely to be in-country doing research and back on the job. The several tables which follow provide detailed schedules for these major activities. A summary of key dates is provided below:

<u>Date</u>	<u>Activity</u>	<u>Responsibility</u>
8/78	A. Sign Loan Agreement	AID/GSL
10/78	B. Sign T.A. Contract	GSL/Contractor
11/78	C. 1st T.A. Arrival (Space Utilization)	Contractor
12/78	D. First Building Approvals	GSL
12/78	E. Chief of T.A. Party Arrives	Contractor
6/79	F. Initial Building Construction	GSL
8/79	G. First Trainees Depart	Contractor/GSL
8/79	H. Beginning Substantial T.A. Effort	Contractor
9/79	I. Initial Equipment Orders	
		GSL/AID
5/81	J. Complete Final Buildings	GSL
10/83	K. Complete T.A. Series	Contractor
9/85	L. Last Trainee Returns	Contractor/GSL

### 2. Responsibility

Project implementation will be undertaken by the PGIA and Faculty of Agriculture with substantial assistance from a contractor under a host country arrangement. The main job of the contractor will be to provide long and short term technical assistance to teach courses, develop farms, and other research activities, assist in developing curriculum, and to arrange for and place trainees. The PGIA and Faculty must arrange for and recruit additional staff and students, coordinate research and provide for additional buildings. This latter will be done with the assistance of a local A & E firm who will finalize building designs and specifications and supervise construction. Actual construction will be done by local private or public sector organizations.

Equipment requirements will be finalized by the Faculty and PGIA with the help of the contractor and AID. AID will order the equipment for the project. This will likely require TDY services of someone from AID/W to package the detailed equipment lists in a format for bidding.

USAID's office of Project Development and Implementation will monitor project implementation. The extent of the training, technical assistance, and equipment requirements entailed in the project coupled with the relatively small size staff of the Faculty and PGIA will require almost a full time effort by someone from USAID. Consequently an additional position is required and being spar'ed. The AID project manager will be assisted in monitoring implementation by USAID's Office of Agriculture and Rural Development which will be concerned with more technical aspects of the project such as curriculum, course content in training etc.

### 3. Detailed Implementation Schedule

The following tables provide detailed implementation schedules for training, technical assistance, staffing and construction.

PLANNING CALENDAR - IMPLEMENTATION PLAN

TECHNICAL ASSISTANCE

		1978				1979				1980				1981				1982				1983				1984				1985			
Technical Assistance <sup>1/</sup>		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ADMIN.	( Chief of Party Administration <sup>2/</sup>																																
	( Space Utilisation				<u>4</u>																												
	( Farm Management <sup>2/</sup>																																
	( Extension																																
AGR. ECON.	( Rural Sociology																																
	( Communications																																
	( Marketing																																
	( Business Management																																
CROP SC.	( Agro-climatology																																
	( Cropping Systems																																
	( Weed Science																																
AGR. BIOL.	( Plant Breeding																																
	( Entomology																																
	( Plant Pathology																																

ADMIN.

AGR. ECON.

CROP SC.

AGR. BIOL.

		1978				1979				1980				1981				1982				1983				1984				1985			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AGR. CHEM.	(Soil Physics																																
	(Soil Chemistry																																
	(Soil Microbiology																																
	(Food Technology																																
	(Dairy Science Production <sup>1/</sup>																																
ANIMAL HUSBANDRY	(Meat Products <sup>2/</sup>																																
	(Physiology																																
	(Animal Breeding																																
	(Agrostology																																
	(Nutrition (Monogastric)																																
	(Nutrition (Ruminant)																																
	(Tillage <sup>3/</sup>																																
	(Water Management																																
	(Waste Management																																
	(Dairy Engineering																																

	1978				1979				1980				1981				1982				1983				1984				1985			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Long Term in Sri Lanka Total	1				1	1	3	4	5	6	8	8	9	8	7	4	4	3	3	2	1	1	0	0	0	0	0	0	0	0	0	0
Short Term in Sri Lanka (All U.S.)		1	1	0	3	3	4	1	4	4	3	1	3	4	2	0	4	3	3	3	3	1	0	0	1	0	0	0	1	0	0	1
Long Term in Sri Lanka (US)			1	1	2	3	4	4	5	5	5	5	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Long Term in Sri Lanka (Other Donors)				1	1	1	2	3	3	3	2	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total U.S. in Sri Lanka	1	2	1	5	6	8	5	7	7	8	6	8	6	4	1	5	4	3	3	3	1	0	0	1	0	0	0	1	0	0	0	1
Total T.A. in Sri Lanka	1	2	1	6	7	9	7	12	12	11	9	10	8	6	3	7	5	4	4	3	1	0	0	1	0	0	0	1	0	0	0	1

- 1/ Excludes four budgeted undetermined three month assignments in areas such as library services, audio-visuals, English lab, management, other academic specialities. Also excludes miscellaneous short term and technical and academic training which may be provided by other donors and which is neither budgeted for nor deemed essential to achievement of project purpose.
- 2/ Assumes Chief of Party will also serve Farm Management T.A. Function. Therefore Farm Management is shown as an identified skill and T.A. requirement but is non-additive as person-months and for budget purposes, if appropriate Chief of Party with Farm Management skills cannot be obtained then Chief of Party filling extension T.A. role could be substituted in which case Farm Management position would be required.
- 3/ Other donor financed.

TRAINING REQUIREMENTS

DEPARTMENT	SUBJECT	D O N O R	NAME	DEPART FOR TRAINING				
				In	1	1	1	1
				9	9	9	9	9
				7	7	8	8	8
				8	9	0	1	2
<b>CROP SCIENCE</b>								
	Agronomy	AUS	Sriskandarajan (x)					
	Seed Physiology	US	Vander Poorten					
	Agroclimatology	US	NH		x			
	Stress Physiology	US	NH		x			
	Cropping Patterns + Systems	US	NH				x	
	Cropping Patterns + Systems	UK	NH		x			
	Crop Ecology	US	NH				(x)	
	Weed Science/Growth Reg.	US	NH				x	
	Growth Physiology	UK	NH				x	
	Growth Physiology	US	NH					(x)
	Post Harvest Physiology	US	NH				x	
							x	
<b>Ag. Biology</b>	Crop Botany	US	Wickremasinghe				x	
	Virology	US	NH				x	
	Crop Physiology	US	NH					x
	Crop Botany	US	NH				x	
	Genetics	US	NH				x	
	Insect Ecology	UK	Nijara Gunasekera(x)				x	
	Biological Control	USU	Raja ...				x	
	Insect Ecology	US	NH					x
	Biological Control	UK	NH				(x)	
	Genetics	UK	NH				(x)	

DEPARTMENT	SUBJECT	D O N O R	NAME	DEPART FOR TRAINING				
				In	1	1	1	1
				9	9	9	9	9
				7	7	0	8	8
				8	9	0	1	2

**Ag. Chemistry**

Soil Physics	US	NH						
Soil Chemistry	UK	NH						
Soil Morphology/Classification	US						(x)	
Soil/plant Nutrition (nuclear techniques)	US						x	
Food and Nutrition	CP	Kanagaratnam						
Food Preservation	US	NH						
Food Analysis	US	NH						

**Ag. Econ + Ext**

Marketing	US	NH						
Ag. Business Management	US	NH						
Ag. Business Management	US	NH						
Rural Sociology	ADC/AUS	Sivayoganathan (x)						
Ag Extension	US	NH						
Ag Extension	ADC							
Communications	US							
Rural Sociology	US							

**Animal Husbandry**

Genetics	US	Ravindran						
Agrostology	AUS	Panditheratne						
Agrostology	US	NH						
Monogastric Nutrition	US	NH						
Animal Physiology	US	NH						



**FACULTY/PGIA  
STAFFING STATUS SUMMARY  
1978-1985**

DEPARTMENT	TRAINING PLAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
<b>1. Crop Science</b>	a	3	3		6	6		6	6		6	7		7	8		8	8		14	14		16	17	b	0	0		2	0		2	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	6		0	1		0	0		0	0		0	0		0	0		0	0	d	0	0		1	3		6	8		9	8		3	1		6	0		2	1		0	0	e	5	2		1	1		1	1		0	0		0	0		0	0		0	0		0	0	f	0	0		0	0		1	1		1	2		6	8		3	3		1	0		0	0	g	0	3		0	0		0	0		1	0		1	0		0	6		0	2		1	0	h	3	8		8	12		9	8		8	9		14	16		11	17		15	16		17	17	<b>2. Agr. Biology</b>	a	4	4		6	7		8	8		8	8		8	8		10	10		14	14		18	18	b	2	2		4	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	5		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		1	5		5	9		8	4		5	0		4	0		4	0		0	0	e	3	3		2	1		1	0		0	0		0	0		0	0		0	0		0	0	f	0	0		0	0		0	1		2	6		4	8		4	4		0	0		0	0	g	0	0		1	1		0	0		0	0		0	2		0	4		0	4		0	0	h	6	11		11	12		12	9		10	14		12	18		14	18		14	18		18	18	<b>3. Agr. Chemistry</b>	a	4	4		4	4		4	4		6	6		6	6		6	7		10	10		14	14	b	2	2		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		1	3		3	7		6	4		4	1		2	0		4	0		0	0	e	2	2		2	3		3	1		1	0		0	0		1	0		0	0		0	0	f	0	0		0	0		0	0		1	4		4	7		4	4		0	0		0	0	g	0	0		0	0		0	2		0	0		0	0		1	3		0	4		0	0	h	6	8		7	8		8	6		7	10		10	13		11	14		10	14		14	14
<b>2. Agr. Biology</b>	a	4	4		6	7		8	8		8	8		8	8		10	10		14	14		18	18	b	2	2		4	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	5		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		1	5		5	9		8	4		5	0		4	0		4	0		0	0	e	3	3		2	1		1	0		0	0		0	0		0	0		0	0		0	0	f	0	0		0	0		0	1		2	6		4	8		4	4		0	0		0	0	g	0	0		1	1		0	0		0	0		0	2		0	4		0	4		0	0	h	6	11		11	12		12	9		10	14		12	18		14	18		14	18		18	18	<b>3. Agr. Chemistry</b>	a	4	4		4	4		4	4		6	6		6	6		6	7		10	10		14	14	b	2	2		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		1	3		3	7		6	4		4	1		2	0		4	0		0	0	e	2	2		2	3		3	1		1	0		0	0		1	0		0	0		0	0	f	0	0		0	0		0	0		1	4		4	7		4	4		0	0		0	0	g	0	0		0	0		0	2		0	0		0	0		1	3		0	4		0	0	h	6	8		7	8		8	6		7	10		10	13		11	14		10	14		14	14																																																																																																																																																																																																	
<b>3. Agr. Chemistry</b>	a	4	4		4	4		4	4		6	6		6	6		6	7		10	10		14	14	b	2	2		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		1	3		3	7		6	4		4	1		2	0		4	0		0	0	e	2	2		2	3		3	1		1	0		0	0		1	0		0	0		0	0	f	0	0		0	0		0	0		1	4		4	7		4	4		0	0		0	0	g	0	0		0	0		0	2		0	0		0	0		1	3		0	4		0	0	h	6	8		7	8		8	6		7	10		10	13		11	14		10	14		14	14																																																																																																																																																																																																																																																																																																																																																																																																		

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<b>4. Agr. Economics/Farm Mgt.</b>	a	2	2		3	5		5	5		5	5		5	6		6	6		9	11		14	14	b	1	1		3	1		4	0		0	0		0	0		0	0		0	0		0	0	c	0	3		0	5		0	0		0	0		0	0		0	0		0	0		0	0	d	0	0		0	2		4	8		8	3		3	0		3	2		3	0		0	0	e	3	3		1	1		0	0		0	1		0	0		0	0		0	0		0	0	f	0	0		0	0		1	1		1	5		5	8		5	3		0	0		0	0	g	0	0		2	0		0	0		0	0		1	0		0	3		2	3		0	0	h	3	6		8	11		10	6		6	10		11	14		11	12		11	14		14	14	<b>5. Animal Husbandry</b>	a	4	4		4	4		4	4		5	5		6	6		6	6		10	10		14	14	b	2	2		4	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	1	1		1	4		4	5		5	2		2	0		3	0		2	0		0	0	e	1	1		1	2		2	4		4	3		3	1		1	0		2	0		0	0	f	0	0		0	0		0	0		0	3		3	7		4	4		0	0		0	0	g	0	0		0	0		0	1		0	1		0	0		0	4		0	4		0	0	h	6	8		8	8		8	5		5	9		9	13		10	14		16	14		14	14	<b>6. Agr. Engineering</b>	a	2	2		3	3		3	3		3	3		3	3		6	6		10	10		14	14	b	2	0		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	3		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	1		1	4		4	6		6	3		5	1		3	0		3	0		0	0	e	2	2		2	3		3	3		3	2		3	0		1	0		1	0		0	0	f	0	0		0	0		0	2		2	6		3	7		4	4		0	0		0	0	g	0	1		0	0		0	0		0	0		0	3		0	4		0	4		0	0	h	4	6		6	7		7	5		5	9		6	13		10	14		10	14		14	14	<b>7. Summary - All Departments</b>	a	19	19		26	29		30	30		33	34		35	37		42	43		67	69		90	91	b	9	7		19	1		22	0		0	0		0	0		0	0		0	0		0	0	c	0	17		0	27		0	1		0	0		0	0		0	0		0	0		0	0	d	1	2		5	21		26	43		42	24		22	3		21	2		18	1		0	0	e	16	13		9	11		10	9		8	6		7	1		3	0		3	0		0	0	f	0	0		0	0		2	5		7	26		25	45		24	22		1	0		0	0	g	0	4		3	1		0	3		1	1		2	5		1	24		2	21		1	0	h	28	47		48	58		54	52		62	60		62	87		70	89		70	90		91	91	<b>Total Staff Hired</b>	i	45	62		62	90		90	91		91	91		91	91		91	91		91	91		91	91
<b>5. Animal Husbandry</b>	a	4	4		4	4		4	4		5	5		6	6		6	6		10	10		14	14	b	2	2		4	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	2		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	1	1		1	4		4	5		5	2		2	0		3	0		2	0		0	0	e	1	1		1	2		2	4		4	3		3	1		1	0		2	0		0	0	f	0	0		0	0		0	0		0	3		3	7		4	4		0	0		0	0	g	0	0		0	0		0	1		0	1		0	0		0	4		0	4		0	0	h	6	8		8	8		8	5		5	9		9	13		10	14		16	14		14	14	<b>6. Agr. Engineering</b>	a	2	2		3	3		3	3		3	3		3	3		6	6		10	10		14	14	b	2	0		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	3		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	1		1	4		4	6		6	3		5	1		3	0		3	0		0	0	e	2	2		2	3		3	3		3	2		3	0		1	0		1	0		0	0	f	0	0		0	0		0	2		2	6		3	7		4	4		0	0		0	0	g	0	1		0	0		0	0		0	0		0	3		0	4		0	4		0	0	h	4	6		6	7		7	5		5	9		6	13		10	14		10	14		14	14	<b>7. Summary - All Departments</b>	a	19	19		26	29		30	30		33	34		35	37		42	43		67	69		90	91	b	9	7		19	1		22	0		0	0		0	0		0	0		0	0		0	0	c	0	17		0	27		0	1		0	0		0	0		0	0		0	0		0	0	d	1	2		5	21		26	43		42	24		22	3		21	2		18	1		0	0	e	16	13		9	11		10	9		8	6		7	1		3	0		3	0		0	0	f	0	0		0	0		2	5		7	26		25	45		24	22		1	0		0	0	g	0	4		3	1		0	3		1	1		2	5		1	24		2	21		1	0	h	28	47		48	58		54	52		62	60		62	87		70	89		70	90		91	91	<b>Total Staff Hired</b>	i	45	62		62	90		90	91		91	91		91	91		91	91		91	91		91	91																																																																																																																																																																																																	
<b>6. Agr. Engineering</b>	a	2	2		3	3		3	3		3	3		3	3		6	6		10	10		14	14	b	2	0		3	0		4	0		0	0		0	0		0	0		0	0		0	0	c	0	3		0	4		0	0		0	0		0	0		0	0		0	0		0	0	d	0	1		1	4		4	6		6	3		5	1		3	0		3	0		0	0	e	2	2		2	3		3	3		3	2		3	0		1	0		1	0		0	0	f	0	0		0	0		0	2		2	6		3	7		4	4		0	0		0	0	g	0	1		0	0		0	0		0	0		0	3		0	4		0	4		0	0	h	4	6		6	7		7	5		5	9		6	13		10	14		10	14		14	14	<b>7. Summary - All Departments</b>	a	19	19		26	29		30	30		33	34		35	37		42	43		67	69		90	91	b	9	7		19	1		22	0		0	0		0	0		0	0		0	0		0	0	c	0	17		0	27		0	1		0	0		0	0		0	0		0	0		0	0	d	1	2		5	21		26	43		42	24		22	3		21	2		18	1		0	0	e	16	13		9	11		10	9		8	6		7	1		3	0		3	0		0	0	f	0	0		0	0		2	5		7	26		25	45		24	22		1	0		0	0	g	0	4		3	1		0	3		1	1		2	5		1	24		2	21		1	0	h	28	47		48	58		54	52		62	60		62	87		70	89		70	90		91	91	<b>Total Staff Hired</b>	i	45	62		62	90		90	91		91	91		91	91		91	91		91	91		91	91																																																																																																																																																																																																																																																																																																																																																																																																		
<b>7. Summary - All Departments</b>	a	19	19		26	29		30	30		33	34		35	37		42	43		67	69		90	91	b	9	7		19	1		22	0		0	0		0	0		0	0		0	0		0	0	c	0	17		0	27		0	1		0	0		0	0		0	0		0	0		0	0	d	1	2		5	21		26	43		42	24		22	3		21	2		18	1		0	0	e	16	13		9	11		10	9		8	6		7	1		3	0		3	0		0	0	f	0	0		0	0		2	5		7	26		25	45		24	22		1	0		0	0	g	0	4		3	1		0	3		1	1		2	5		1	24		2	21		1	0	h	28	47		48	58		54	52		62	60		62	87		70	89		70	90		91	91	<b>Total Staff Hired</b>	i	45	62		62	90		90	91		91	91		91	91		91	91		91	91		91	91																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
<b>Total Staff Hired</b>	i	45	62		62	90		90	91		91	91		91	91		91	91		91	91		91	91																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

**FACULTY/PGIA  
STAFFING STATUS SUMMARY  
1978-1985**

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- a) Training completed - on campus
- b) To be trained - on campus
- c) New hire - on campus
- 4) Training in USA
- e) Training in other countries
- f) Training research/teaching in Sri Lanka
- g) Return from training
- h) Total staff trained - on campus
- i) Total staff allocated and hired

1) Only professional staff - does not include academic technicians and/or demonstrators

2) Assumes that other western donor agencies training will also include Ph.D. research/teaching in Sri Lanka.

Source: Faculty/PGIA projections revised 3/19/78

CONSTRUCTION SCHEDULE  
ESTIMATE - VARIOUS BUILDING TYPES  
IN WEEKS

PHASE	CONSTRUCTION TYPE				
	1	2	3	4	5
	Multi-Story Class/Lab/Office	Single Story Class/Lab/Office	Covered Shop/ Barn/Silo	Greenhouse/ Insectory/Hatchery	Classroom/ Office Renovation
<u>SPACE UTILIZATION STUDY BEGINS</u>					
Nov	Nov '78 - Jan '79				
	1.Pre-Planning-Floor Diagrams, Location Approval Campus Building Committee - Rough cost estimate - Borings	2	2	2	2
	Approval by Capital Budget Committee	1	1	1	1
Feb	Feb - April				
	2.Architecture/Engineering drawings and Bill of Quantities (BOQ)	3	3	3	3
May	May - June				
	3.Bidding procedure - Final cost estimate base, advertizing closing Tender Board awards contract	2	2	2	2
Construction begins					
July	4.Site Preparation Foundations	4	1-1/2	1-1/2	1-1/2
	5.General construction, electricity, gas, drains, water, etc	14	7	4	4
	6.Finishing-fittings, furniture, painting landscaping	2	2	1	1
	7.Inspection/Acceptance (provisional)	2	1-1/2	1/2	1/2

## BUILDING PLAN (Square Feet) Completed Space

DEPARTMENT	1978		1979		1980		1981		1982		1983		1984		1985	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1. Crop Science																
Campus (Renovation)		7,000														
Farm					7,000				7,000							
					D 13,500			7,500	18,000							
					M 2,400											
2. Agr. Biology																
Campus																
Farm								2,400	14,000							
3. Agr. Chemistry																
Campus																
Farm									16,000							
4. Agr. Economics/Farm Mgt.																
Campus																
Farm									*4,900							
5. Animal Husbandry																
Campus																
Farm								2,125		26,000						
							D 3,500									
6. Agr. Engineering																
Campus	*12,700						4,000									
Farm							D 7,500									
							M 7,800	2,340								
7. Administration																
Campus (Renovation)																
Motor Pool										10,000						
8. PGIA																
Classroom	*18,000															
Library																
Administration																
		7,000		2,450	45,700	14,365	52,900	36,000	7,000							
	*30,700								* 4,900							

\* Already funded by GSL  
D=Dodongolla Farm  
M=Meewatura Farm

**POSTGRADUATE INSTITUTE OF AGRICULTURE  
BUILDING PROGRAM  
OFF CAMPUS - FARMS**

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Name of Building & Department	Building 1/ Type	Tentative Date of Commencement	Tentative Date of Completion
<u>DODONGALLA</u>			
1. Agr. Engineering Farm Machinery Unit	3	July 1979	Feb 1980
2. Animal Husbandry Dairy Barn	3	July 1979	Feb 1980
3. Animal Husbandry Silc		July 1979	Feb 1980
4. Crop Science Training Center	1	July 1979	May 1981
5. Crop Science Nursery Propogation	3	July 1979	Feb 1980
6. Crop Science Tech. Staff Quarters	2	July 1979	July 1980
7. Crop Science Office Staff Quarters	2	July 1979	July 1980
8. Crop Science Minor Staff Quarters	2	July 1979	July 1980
<u>MEEWATURA</u>			
1. Agr. Engineering Machinery Shed	3	July 1979	Feb 1980
2. Agr. Engineering Field Asst. Quarters	2	July 1979	July 1980
3. Agr. Engineering Field Laboratory	3	July 1979	Feb 1980
4. Agr. Engineering Minor Staff Quarters	2	July 1979	July 1980
5. Crop Science Plant House	3	July 1979	Feb 1980
<u>1/</u> Type of Building:	Type 1 - Multistory Class/Lab/Office; Type 2 Single Story Class/Lab/Office; Type 3- Covered shop/barn/silo Type 4 - Green House/Insectory/Hatchery; Type 5-Class Room/Office Renovation.		

POSTGRADUATE INSTITUTE OF AGRICULTURE  
BUILDING PROGRAM  
ON CAMPUS

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Name of Building & Department	Building <u>1</u> / Type	Tentative Date of Commencement	Tentative Date of Completion
1. Agr. Chemistry Laboratory	1	July 1979	May 1981
2. Agr. Biology Laboratory	1	July 1979	May 1981
3. Animal Husbandry Nutrition Laboratory	1	Dec 1979	Oct 1981
4. Animal Husbandry Animal Unit	1	Dec 1979	Oct 1981
5. Animal Husbandry Product Processing	1	Dec 1979	Oct 1981
6. Agr. Engineering Central Workshop	3	July 1979	Feb 1980
7. Agr. Biology Greenhouse	4	Dec 1979	July 1980
8. Agr. Biology Insectory	4	Dec 1979	July 1980
9. Animal Husbandry Hatchery	4	Dec 1979	July 1980
10. Administration Vehicle Storage Sheds	Special	July 1979	Dec 1979
11. Crop Science Renovation			3rd Floor-Dec '79 2nd Floor-July '80 1st Floor-June '80
12. Admin. Agr. Biology Renovation to Lib and Staff	5	May 1981	Dec 1981

1/ Type of Building: Type 1 - Multistory Class/Lab/Office; Type 2 - Single Story Class/Lab/Office; Type 3 - Covered Shop/Barn/Silo; Type 4 - Green House/Insectory/Hatchery; Type 5 - Class Room/Office Renovation.

ENROLLMENT PROJECTION

FACULTY B.Sc. DEGREE

<u>Study Year</u>	1974-5	1975-6	1976-7	1977-8	1978-9	1979-80	1980-1	1981-2	1982-3	1983-1986
1	98	99	100	150	200	200	200	200	200	same
2 *	102	108	109	108	157	206	206	206	206	same
3	99	100	106	107	106	154	202	202	202	same
4	91	98	99	105	106	105	152	200	200	same
<b>Total</b>	<b>390</b>	<b>405</b>	<b>414</b>	<b>470</b>	<b>569</b>	<b>665</b>	<b>760</b>	<b>808</b>	<b>808</b>	<b>same</b>

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Source: 1. Faculty & PGIA records  
2. Estimates of Departmental Heads 3/20/78

\* In second year 10 qualified new students are admitted from Government Service who have basic farm training and experience

Faculty Graduates projected at 1968-76 survival rate of 98% for years 1-3 and 99% for year 4.

**FACULTY OF AGRICULTURE/PGIA  
ENROLLMENT AND GRADUATE PROJECTIONS**

ENROLLMENT		Actual			Projected						
		1975-6	1976-7	1977-8	1979	1980	1981	1982	1983	1984	1985
FACULTY	B.S.	98	99	100	150	200	200	200	200	200	200
	NEW TOTAL	390	405	414	470	569	665	760	808	808	808
=====											
PGIA (TOTAL)											
CROP SCIENCE	MS	8	3	4	7	7	7	9	10	14	16
	MPh	0	0	(2) 2	(2) 4	(2) 3	(1) 3	(2) 3	(2) 4	(3) 5	(3) 6
	PhD	0	0	0	2	(1) 3	(2) 5	(2) 5	(2) 6	(3) 7	(4) 9
AGR. BIOLOGY	MS	7	2	4	5	7	7	6	7	8	9
	MPh	0	(1) 1	(3) 4	(1) 4	(2) 3	(2) 4	2	(2) 2	(1) 3	(2) 3
	PhD	1	0	0	0	(1) 3	(1) 4	(2) 5	(2) 5	(3) 6	(2) 5
AGR. CHEMISTRY	MS	2	2	3	4	6	6	5	7	8	8
	MPh	0	0	(1) 1	(1) 2	(1) 2	(1) 2	(1) 2	(1) 2	(1) 2	(1) 2
	PhD	0	(1) 1	1	(1) 2	(1) 3	(1) 3	(3) 3	(3) 5	(1) 5	(2) 5
AGR. ECONOMICS/ EXTENSION	MS	7	6	8	8	10	10	12	15	17	18
	MPh	3	0	(2) 2	(1) 3	(2) 3	(1) 3	(2) 3	(2) 4	(3) 5	(2) 5
	PhD	0	0	1	(3) 4	(3) 7	(5) 10	(3) 10	(5) 12	(6) 13	(5) 15
ANIMAL HUSBANDRY	MS	1	2	5	6	6	8	8	10	11	10
	MPh	0	(2) 2	1	1	(1) 2	1	(1) 1	(1) 2	(2) 3	(2) 4
	PhD	0	0	0	(1) 1	1	(1) 2	1	1	(1) 1	(1) 2
AGR. ENGINEER	MS	1	1	2	6	5	8	8	11	12	14
	MPh	0	0	0	(4) 4	(1) 5	1	(1) 1	(1) 2	(1) 2	(1) 2
	PhD	0	0	0	0	(1) 1	(1) 2	(1) 3	(1) 3	(1) 3	(1) 3
=====											
SUB TOTAL	MS	26	16	26	36	41	46	48	60	70	75
	MPh	0	(3) 3	(8) 10	(9) 18	(9) 18	(5) 14	(7) 12	(9) 16	(11) 20	(11) 22
	PhD	1	(1) 1	2	(4) 9	(7) 17	(10) 26	(7) 27	(13) 32	(15) 35	(15) 39
=====											
TOTAL PGIA ENROLLMENT		27	20	38	63	75	86	87	108	125	136

( ) = New entrants

(CONTINUED)

FACULTY OF AGRICULTURE/PGIA  
ENROLLMENT AND GRADUATE PROJECTIONS (CONTINUED)

		Actual			Projected							
		1975-6	1976-7	1977-8	1979	1980	1981	1982	1983	1984	1985	
<u>GRADUATES</u>												
FACULTY	TOTAL BS	91	98	99	105	106	105	152	200	200	200	
=====												
PGIA	MS	14	13	23	32	37	41	43	54	63	68	
	MPh	0	0	1	8	7	8	6	7	8	10	
	PhD	0	0	0	1	1	6	7	10	8	10	
-----												
PGIA TOTAL		14	13	2	41	45	55	56	71	79	88	
=====												
TOTAL FACULTY/PGIA GRADUATES		105	111	123	146	151	160	208	271	279	288	

Source: 1) Faculty and PGIA records  
2) Estimates of Departmental Heads

NOTE:

1. Faculty Graduates projected at 1968-76 survival rate of 98.1 for years 1-3 and 99% for year 4.
2. In second year Faculty admits 10 qualified new students from Government Service who already have basic Farm training and experience.
3. PGIA Graduates projected at approximately 10% of initial year enrollment.
4. Projected enrollments based on past experience, Demand shown in AED study, and reasonable ability of Faculty/PGIA to respond to the Demand during expansion/training activities of this project.

#### 4. Evaluation Arrangements

Four evaluations are planned which will be carried out by USAID and the GSL. The first evaluation will occur two years after the Project Agreement is signed and will review such things as progress in facilities, construction, equipment arrivals, recruitment of new staff, curriculum development, confirmation of upcoming technical assistance, placement of trainees and research design. The second evaluation will occur two years later and review research, outreach, student recruitment, progress of degree training, and placement of graduating students. The third evaluation will occur in the sixth year of the project and will focus on staff and curriculum quality, placement of students, ongoing research and outreach efforts and the future role of PGIA and the Faculty as well as any future needs. The final evaluation will take place one or two years after the project terminates and will review the overall status of higher level training for agricultural development and the role of PGIA and the Faculty.

#### 5. Conditions, Covenants, and Negotiating Status

The relationship of the PGIA to the University of Sri Lanka and of University of Sri Lanka at Peradeniya to the rest of the University system is in a considerable state of flux due to forthcoming promulgation of a new University Bill and the recent institution of a separate Ministry of Higher Education. The new bill is expected to provide for greater autonomy to the individual University campuses while leaving the specific status of the Institutes such as PGIA to be determined at a subsequent date. The options for PGIA are not whether the function will be maintained but whether and how PGIA would function as a separate institution or whether its function will be merged with the Faculty of Agriculture. USAID has no strong preference for either arrangement. The point is that while the conditions precedent and covenants noted below have been discussed and supported by the PGIA, Faculty, and various Ministry personnel new people may become involved in these negotiations in the next month or two necessitating additional negotiations. Therefore USAID proposes that the special conditions noted below are not included in the authorization which would limit the Missions ability to actually negotiate, but that they be included in the draft agreement presented to the GSL for negotiation. It is certainly possible negotiation may produce better language or alternative means of insuring the job gets done. The conditions and covenants we propose to negotiate further are:

##### Conditions Precedent to First Disbursement

A. Evidence that the Ministry of Higher Education and the Ministry of Finance approve and will provide funds on a timely basis for the construction of buildings on and off-campus that are noted in Annex A of the project agreement.

B. Evidence that a competent authority approves and will authorize funds for the hiring of a private A and E firm for design and construction and supervision of additional required facilities. This firm would be responsible to the GSL Project Director.

C. Evidence of authorization for the Faculty of Agriculture to recruit staff for authorized 1977 and 1978 positions.

D. Agreement by a competent authority that approval will be given to recruit sufficient additional professional staff in 1979 and 1980 to provide for 49 people to leave for training in 1979 and 1980.

E. Agreement by a competent authority that existing and newly recruited staff are not required to serve for any fixed period of time prior to when they can depart for training.

F. Designation of a Project Director with authority for day-to-day implementation of the project including authority to request and approve disbursements under the grant.

G. A signed contract for the technical assistance to be provided under the grant.

H. Evidence of agreement by a competent authority that PGIA can hire the additional sub-professional and non-professional staff required by the project.

I. Evidence of agreement by a competent authority that staff trained under the project will not be transferred from Peradeniya to other locations without the prior written agreement of AID until 3 years after the project assistance completion date.

J. Appointment of a Farm Manager to report directly to the Dean of the Faculty of Agriculture.

At APAC held on 13 July 1978, decision was made to include Conditions A, C, D, E, F, and H as Conditions Precedent in Project Authorization. See Appendix A2.

## 6. Required Waivers

A waiver is required to permit procurement of the following vehicles from AID Geographic Code 935 because such vehicles which are required under the project and are not produced in the United States:

<u>Type</u>	<u>Probable Source</u>	<u>Quantity</u>	<u>Total Cost with spares</u>
Trail bike $\approx$ 100 cc	Japan	7	4,200
Mini bus, 12 passenger RHD diesel	Japan	2	13,200
Bus, diesel, 34 passenger RHD	India	2	36,000
Double cab Pick-up truck	Japan	1	6,600
2-3 ton Stake truck	Japan	1	10,000
Total			\$ 70,000

## APPENDIX A

## Part I

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5C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: (Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)
  - (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;
  - (b) Is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure plus 10%)?

(a) Notification of the proposed project will be given to Congress.  
(b) Yes.
2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) All plans necessary to carry out the assistance have been completed.  
(b) The cost of assistance by the United States is firm.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

Legislative action is not required.
4. FAA Sec. 611(b); App. Sec. 10L. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

Not applicable.
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

This is not a capital assistance project.

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A.

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multi-lateral organizations or plans to the maximum extent appropriate?

Not applicable.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

The project will improve the efficiency of Agriculture by increasing the number of personnel trained in Agriculture.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

Private entities will have the opportunity to provide technical assistance for the project.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

The local currency costs of the project will be provided by the Government of Sri Lanka.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

## B. FUNDING CRITERIA FOR PROJECT

### 1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

By providing the institutional capability to train more agricultural personnel the project will indirectly promote better programs in the agricultural sector in which the bulk of the poor are involved.

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b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

- (1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;
- (2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;
- (3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;
- (4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:
  - (a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;
  - (b) to help alleviate energy problem;
  - (c) research into, and evaluation of, economic development processes and techniques;
  - (d) reconstruction after natural or manmade disaster;
  - (e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;
  - (f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

The project is designed to increase the relevance of agricultural training to problems of Sri Lanka and the poor through emphasis on indigenous training, local research, and outreach and extension.

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(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

The GSL will contribute approximately 30% of the costs of the project.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

Not applicable.

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

The project is directly aimed at increasing the number of trained personnel in Sri Lanka.

f. FAA Sec. 281(b). Describes extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

The project reflects the plans of the institutions involved and is designed to increase the intellectual resources applied to development.

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g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

The project is designed to expand educational institutions training people who will be involved in Agriculture. The project paper notes the project is economically and technically sound.

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

Goods and services provided for the project will come primarily from the U.S.

5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

- |   |   |
|---|---|
| 1. <u>FAA Sec. 602.</u> Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?   | Small businesses will have the opportunity to provide goods required for the project.   |
| 2. <u>FAA Sec. 604(a).</u> Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?   | Yes.  |
| 3. <u>FAA Sec. 604(d).</u> If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?  | The Cooperating Country does not so discriminate.   |
| 4. <u>FAA Sec. 604(e).</u> If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?   | N.A.  |
| 5. <u>FAA Sec. 608(a).</u> Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?  | Yes.  |
| 6. <u>MMA Sec. 901(b).</u> (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. | This requirement is included in the project Agreement.  |
| 7. <u>FAA Sec. 621.</u> If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? i. the facilities of other Federal agencies will be utilized,  | Private sector organizations will have the opportunity of competing to provide technical assistance on the project. Other federal agency facilities will not be used. |

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are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Yes.

B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

This is not a capital project. Local construction will be done by local organizations financed by the Cooperating Country.

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

Yes.

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

Not applicable.

C. Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

Not applicable.

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

Not applicable.

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?

Yes.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?

Yes.

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5. Will arrangements preclude use of financing:
- a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? **Yes.**
  - b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? **Yes.**
  - c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? **Yes.**
  - d. FAA Sec. 662. for CIA activities? **Yes.**
  - e. App. Sec. 103. to pay pensions, etc., for military personnel? **Yes.**
  - f. App. Sec. 106. to pay U.N. assessments? **Yes.**
  - g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). **Yes.**
  - h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? **Yes.**
-

## DRAFT PROJECT AUTHORIZATION

### Agricultural Education Development AID Grant No.

Pursuant to Part 1, Chapter 1, Section 105 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a grant to the Government of Sri Lanka (the "Cooperating Country") of not to exceed Six Million United States Dollars (\$6,000,000) to help in financing certain foreign exchange and local currency costs of goods and services required for the project. The project consists of upgrading the physical, technical and human resources of the Post Graduate Institute of Agriculture and the Faculty of Agriculture of the University of Sri Lanka, Peradeniya Campus to enable Sri Lanka to triple the annual number of indigenously trained post graduates and double the annual number of indigenously trained B. Sc. graduates in Agriculture.

I approve the total level of AID appropriated funding planned for this project of not to exceed Three Million United States Dollars (\$3,000,000) Grant funded, including the funding authorized above, during the period FY 1978. I approve further increments during that period of Grant funding up to \$3,000,000, subject to the availability of funds in accordance with AID allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with AID regulations and delegations of authority subject to the following essential terms and major conditions, together with such other terms and conditions as AID may deem appropriate.

#### A. Source and Origin of Goods and Services

Except for ocean shipping or as AID may otherwise agree in writing, goods and services financed by AID under the project shall have their source and origin in the United States of America. Ocean shipping financed under the grant shall be procured in any eligible source country except the Cooperating Country.

B. Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, Grantee shall furnish in form and substance satisfactory to AID,

1. Evidence that the Ministry of Higher Education and the Ministry of Finance approve and will provide funds and make arrangements on a timely basis for the construction of buildings on and off-campus that are noted in Annex A of the project agreement.

2. Evidence of agreement by competent authority that the Postgraduate Institute of Agriculture and the Faculty of Agriculture may recruit and hire necessary personnel during the Life of the Project in order to permit long-term training and adequate staffing commensurate with the objectives of the Project.

3. Evidence of agreement by a competent authority that existing and newly recruited staff are not required to serve for any fixed period of time prior to when they can depart for training.

4. Designation of a Project Director with authority for day-to-day implementation of the project.

C. Waivers

Waivers to permit procurement of vehicles as identified in the Project Paper from AID Geographic Code 935 are hereby approved.

Signature \_\_\_\_\_

Assistant Administrator  
Bureau for ASIA

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**විදේශ සම්පත් අංශය**  
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**EXTERNAL RESOURCES DIVISION**  
 Ministry of Planning & Economic Affairs

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 Ceylinco House (2nd Floor)  
 ප. ම. ම. 377, කොළඹ 1  
 P. O. Box 377, Colombo 1

January 26, 1977.

Dear Tom,

Annexed are two copies of a request submitted on behalf of the Post Graduate Institution of Agriculture University of Sri Lanka Peradeniya. This Division has no objections to this request being considered for financing provided the cost of such financing is not debited to any ongoing programmes between US A.I.D. and the Government of Sri Lanka.

Yours sincerely,  
*M.A. Mohamed*  
 ( M.A. Mohamed )  
 Additional Director.

Mr Thomas Arndt,  
 A.I.D. Representative,  
 American Embassy,  
 Colombo.

me with TA





10 FEB/1030/1978

*Jeff. Acton*

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TAGS:

SUBJECT: POST GRADUATE INSTITUTE OF AGRICULTURE  
PROJECT PAPER

AA/ASIA, JOHN H. SULLIVAN TODAY APPROVED PROJECT REVIEW COMMITTEE RECOMMENDATION TO PROCEED WITH PREPARATION OF THE PROJECT PAPER FOR THE POST GRADUATE INSTITUTE OF AGRICULTURE PROJECT. ALSO APPROVED WERE RECOMMENDATIONS ON FUNDING OF CONSULTANT SERVICES AND TRAVEL OF DR. CLAYTON SEELEY TO HELP PREPARE PP, IF REQUIRED. USAID IS REQUESTED TO ESTIMATE THE RESOURCES REQUIRED FOR TIMELY COMPLETION OF PP AND INFORM ASIA BUREAU AS SOON AS POSSIBLE. PLEASE ESTIMATE WHEN SUBMISSION OF THE PP CAN BE EXPECTED. VANCE

BT  
#4969