

5-2 Cost for Operation, Management and Maintenance

Based on the study and the analysis of the collected data, the annual expenses required for operation, management and maintenance of the facilities of this centre are estimated as follows:

1) Personnel (in the Year 1991)	<u>Rs. 4,713,600</u>
Research Officers Class I (48 personnels)	Rs. 2,073,600.-
Class II (36 personnels)	Rs. 1,123,200.-
Administration Staff Grade I (3 personnels)	Rs. 115,200.-
Grade II (8 personnels)	Rs. 249,600.-
Field Workers (60 personnels)	Rs. 1,152,000.-
2) Electricity Consumption	<u>Rs. 630,600</u>
Total demand electricity for the facility 500 KVA	
Estimated maximum consumption 500 KVA x 0.35 = 170 KW	
a) Demand Charge 170 KW x Rs. 115/KW/month =	Rs. 19,550/month
b) Unit charge	Rs. 32,800/month
c) Fixed charge	Rs. 200/month
a) + b) + c) x 12 months =	Rs. 630,600/year
3) Facility Maintenance	<u>Rs. 210,000.-</u>
4) Equipment Maintenance	<u>Rs. 846,000.-</u>
5) Miscellaneous Expenditure	<u>Rs. 388,500.-</u>
<u>1) - 5) Total</u>	<u>Rs. 6,788,700.-</u>

The budget for the personnels expenditure will be arranged by the Department of Agriculture according to the approved cadres of officers up to 1990 being 588 for RO and 150 for RA in which the manpower requirement for the proposed centre is incorporated.

The budget for item 2) to 5) totalling Rs. 2,075,100 will have to be secured in addition to the above personnels wages by the Department so that the proposed centre could function and perform the initial research programme.

CHAPTER 6
PROJECT EVALUATION

CHAPTER 6 PROJECT EVALUATION

The Government of Sri Lanka positions the development and expansion of production of rice and other food crops as well as such export crops as black tea, rubber and coconut as its important policy goals, and plans to aggressively promote related projects, such as those on irrigation, breeding, and extension of cultivating techniques.

Breeding in Sri Lanka is promoted mainly by the Department of Agriculture of the Ministry of Agricultural Development and Research. Its efforts so far have been successful, such as having developed a group of high yielding varieties (HYV) of rice, the so-called H series, Bw series and Bg series. The Government of Sri Lanka is fully aware that if it is to continue improving productivity, it is important to actively collect, preserve, and effectively utilize the plant genetic resources which are being lost.

In the light of such a background, it is considered quite opportune that Sri Lanka should implement this project which aims to construct medium and long term storage facilities to systematically preserve plant genetic resources on a national scale.

1. Effects of the project

This project will bring about the following effects to Sri Lanka.

(1) Direct effects

- 1) Important plant genetic resources in Sri Lanka will not perish but will be preserved and utilized effectively.
- 2) This project will contribute to the development of breeding research in Sri Lanka by:
 - a. strengthening the experiment and research functions,
 - b. improving the technology for experiment and research.
- 3) The project will not only enable Sri Lanka to perform the functional role of preserving the same genetic resources in duplication by international interchange, but will enable Sri Lanka

to utilize plant genetic resources on a broader basis through seed exchange.

(2) Indirect effects

Such activities as exploration and collection, seed storage and evaluation which will be carried out by the Plant Genetic Resources (Storage) Centre will have the following indirect effects on the national economy of Sri Lanka.

- 1) Active varietal improvement will contribute to stabilizing food supply as farmers would be able to expect both stable yield in food croppings and increased production effect by virtue of proper cropping pattern suitable to each locality.
- 2) Diversification in the means for earning foreign currency and reduction in foreign currency outflow

Emergence of export crops next to black tea, rubber and coconut can be expected through varietal improvement programs. Furthermore, a reduction in foreign currency outflow can be expected by the decrease in imports of agricultural products through expansion of their domestic production.

2. Appropriateness of the project

The Department of Agriculture of the Ministry of Agricultural Development and Research, which is the proposed executing agency of this project, has CARI, CRBS and other agricultural research institutes at various locations throughout Sri Lanka and assumes the central role in the research on plant genetic resources and crop breeding in Sri Lanka. Hence, it has in its employ many researchers in this field and, as demonstrated by its success attained in rice, its enthusiasm and technical level are both unquestionable. The inadequacies of its various existing facilities, however, is preventing it from fully demonstrating its potential capability. The scale of the facilities proposed for this Center and the contents of its activities are realistic and reasonable in the light of Sri Lanka's technical and economic levels, and in the same light, it is certain that this Centre will be fully utilized by the

local engineers and scientists. And, if Japan's scheduled technical cooperation is effectively implemented in each respective field, it is certain to further contribute to the research on plant genetic resources in Sri Lanka.

The Government of Sri Lanka has positioned this project as one of the top priority project in consideration of its importance and has appointed the Department of Agriculture of the Ministry of Agricultural Development and Research as the window for the Sri Lankan side. It has also arranged the budget for implementation of the works and the organizational setup for administration and maintenance of this project.

The financial plan to raise the fund necessary for the operation of this Centre has not been clarified yet, although the Department of Agriculture has already decided upon its policy to secure the budget necessary for the administration of this Centre on a priority basis, and in view of the size of its budget, it is believed that the Department of Agriculture will be able to secure adequate funds to administer this Project.

This project, which will be pushed forward against such a background, will not only have a major impact on agricultural development in Sri Lanka but will be greatly beneficial to furthering mutual cooperation, and cementing friendly relationships between Sri Lanka and Japan.

CHAPTER 7
CONCLUSION AND RECOMMENDATION

CHAPTER 7 CONCLUSION AND RECOMMENDATION

1. Conclusion

The Government of Sri Lanka gives top priority to agricultural research and development in view of the importance of agriculture for the country, and this project was conceived as a part of this policy.

The implementation of this project will not only help Sri Lanka to systematically preserve its plant genetic resources which are its valuable assets that are gradually being lost, but to enhance the level of agricultural production in Sri Lanka through breeding programs and also contribute to the stable supply of food will enable it to effectively utilize them to promote crop breeding which is quite important for agricultural production. In the longer range, enhanced agricultural productivity brought about by the development of new varieties will benefit the nation in terms of stable supply of food and expansion of agricultural products export.

The Government of Sri Lanka has already made arrangements for this project, such as arranging the organization and the manpower that will be required for the implementation and operation of this project. Considering its significance and the socio-economic benefits that it will bring to Sri Lanka, this project is most befitting as the object of Japan's grant-in-aid cooperation and should, therefore, be implemented as soon as possible.

2. Recommendation

The study team wishes to make the following recommendations to the Government of Sri Lanka in order that this project may function effectively and be operated efficiently.

- (1) Establishment of a system for effective administration and research
 - 1) It is important to establish a cooperative system for the collection and utilization of plant genetic resources among the

concerned government ministries and research institutes of Sri Lanka which will further enhance the significance of this project.

- 2) In storing the seeds which constitute the nucleus of plant genetic resources, it is necessary to give particular attention to the seeds' water content and storage temperature.
 - 3) Technical interchange among researchers and technical staff shall be invigorated, and an efficient system for collection, preservation and evaluation of plant genetic resources shall be developed.
 - 4) Efficient plant genetic resources preservation and research activities shall be carried out through international interchange.
- (2) Establishment of a system for maintenance and operation of equipment and facilities
- 1) For efficient administration of this Centre, it is desirable that specialized engineers be assigned to operate and maintain the equipment and facilities so that they may fully demonstrate their functional performance.
 - 2) It is desirable that the budget for the maintenance and administration of facilities and equipment be secured.
- (3) Need for upgrading technology

In order to develop this project effectively and efficiently, it is desirable that foreign experts extend their technical cooperation to each laboratory in its research on exploration and collection, storage, clonal preservation, evaluation and data management, respectively.

APPENDIX 1

1. Organization of the Study Team
2. Minutes of Discussions
3. Cooperated Officials in the Survey

1. Organization of the Study Teams

1) The Basic Design Study Team (Jully 26 - August 14, 1986)

Dr. Hiroshi Ikehashi	Team Leader Genetic Resources Coordinator National Institute of Agrobiological Resources Ministry of Agriculture, Forestry and Fisheries
Mr. Seiichi Kanai	Project Coordinator Deputy Head First Basic Design Study Division Grant Aid Planning and Survey Department Japan International Cooperation Agency
Mr. Kazuo Ishihara	Architectural Planner Kume Architects-Engineers
Mr. Akihiro Takeuchi	Architectural Designer Kume Architects-Engineers
Mr. Shigeru Nakabayashi	Mechanical Planner Kume Architects-Engineers
Mr. Mitsuo Mimoto	Electrical Planner Kume Architects-Engineers
Dr. Masatake Tanaka	Genetic Resouces Conservations Planner Overseas Merchandise Inspection Co., Ltd.
Mr. Seizaburo Takahashi	Equipment Planner Overseas Merchandise Inspection Co., Ltd.
Mr. Harunobu Yoshino	Facility Planner Overseas Merchandise Inspection Co., Ltd.

2) The Draft Final Report Confirmation Team

(October 28 - November 6, 1986)

Mr. Yoshihide Teranishi Team Leader
First Basic Design Study Division
Grant Aid Planning and Survey Department
Japan International Cooperation Agency

Mr. Kazuo Ishihara Architectural Planner
Kume Architects-Engineers

Mr. Akihiko Takeuchi Architectural Designer
Kume Architects-Engineers

Dr. Masatake Tanaka Genetic Resources Conservation Planner
Overseas Merchandise Inspection Co., Ltd.

2. Minutes of Discussions

- 1) The preliminary study on Grant aid
April 10, 1986

- 2) The preliminary study on Technical cooperation
July 10, 1986

- 3) The basic design study
August 4, 1986

- 4) The draft report confirmation
November 4, 1986

1) The preliminary study on Grant aid

MINUTES OF DISCUSSIONS

ON

THE RESEARCH INFRASTRUCTURE DEVELOPMENT PROJECT FOR
PRESERVATION AND UTILIZATION OF PLANT GENETIC RESOURCES

IN


THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a preliminary study on the Research Infrastructure Development Project for Preservation and Utilization of Plant Genetic Resources (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Democratic Socialist Republic of Sri Lanka, a study team headed by Dr. Shinji Watanabe, Chief, Germplasm Seed Storage Centre, National Institute of Agro-biological Resources, Ministry of Agriculture, Forestry and Fisheries from 3rd to 12th April, 1986.

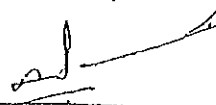
The team had a series of discussions on the Project with the officials of the Government of the Democratic Socialist Republic of Sri Lanka headed by Mr. N.V.K.K. Weragoda, Secretary, Ministry of Agricultural Development and Research and conducted a field study in Kandy District.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

10th April, 1986



Dr. Shinji Watanabe
Team Leader,
Preliminary Study Team
JICA



Mr. N.V.K.K. Weragoda
Secretary,
Ministry of Agricultural
Development & Research

ATTACHMENT

1. The objective of the Project is to establish a Plant Genetic Resources Centre to collect, conserve, evaluate and utilize plant genetic resources such as rice, coarse grains, pulses, root crops, vegetables and fruits for the benefit of further crop improvement in Sri Lanka.
2. The site of the Project is located in land belonging to the Department of Agriculture, within the premises of the Central Agricultural Research Institute at Gannoruwa, Peradeniya, Kandy District. The site map is attached as ANNEX 1.
3. The Department of Agriculture of the Ministry of Agricultural Development and Research is responsible for the execution of the Project.
4. The main activities of the Plant Genetic Resources Centre are as follows:-
 - a) To explore and collect plant genetic resources in Sri Lanka and prevent the loss of valuable genetic resources;
 - b) To conserve plant genetic resources safely for a long term;
 - c) To characterize and evaluate the assembled germplasm materials for use of breeders;
 - d) To rejuvenate and propagate conserved genetic materials without changes in genetic composition.
 - e) To develop research technology required for effective use of genetic resources in plant breeding;
 - f) To promote effective utilization of plant genetic resources in the crop improvement programme through activities such as data recording, processing, retrieval and dissemination;
 - g) To act as a centre for national and international exchange of germplasm and related information. (y)lb

5. The Preliminary Study Team will convey to the Government of Japan the request of the Government of the Democratic Socialist Republic of Sri Lanka, that the former takes necessary measures to cooperate by providing the facilities and equipment listed in ANNEX 11 within the scope of Japanese economic cooperation programme in grant form.
6. The Government of the Democratic Socialist Republic of Sri Lanka has understood Japan's grant aid system explained by the Preliminary Study Team.
7. The Government of the Democratic Socialist Republic of Sri Lanka will take necessary measures listed in ANNEX 111 on condition that the grant aid by the Government of Japan would be extended to the Project.
8. When the grant aid by the Government of Japan is extended to the Project, Technical Cooperation from the Government of Japan is necessary for the implementation of the Project.

Cy/10

RESERVED FOREST

Veterinary
Research
Institute
(V.R.I.)

V.R.I

PUB.

LIBRARY

C.A.R.I

PROPOSED
SITE

87.5.4

ITI

STORE

195M

* PLANT PROTECTION
DIVISION
* SEED CERTIFICATION
DIVISION
* OFFICERS QUARTERS

M A I N R O A D

M H A W E L I V E R

BOTANICAL GARDEN

SOYA BEAR CENTRE

Facilities and equipment for the Plant Genetic Resources Centre are as follows:-

1. Facilities

1.1. Facilities for long term conservation of plant genetic resources.

a. Facilities for seed storage and seed processing

- Storage rooms for long term, medium term and short term conservation
- Seed cleaning room
- Seed drying room
- Germination test room
- Seed inspection room
- Seed packaging room
- Dark room
- Data recording and processing room
- Administration room

b. Facilities for in vitro conservation of vegetative propagated plants.

- Cleaning room
- Medium preparation room
- Sterilization room
- Incubation room
- Culture room

c. Facilities for seed rejuvenation and propagation, and for climatization of vegetative propagated plants in vitro conservation

- Field, nursery and their irrigation system
- Green houses
- Screen houses
- Growth chambers
- Management house

- 1.2 Laboratories for research and development of technology for plant genetic resources management.
 - a. Laboratory for systematic exploration and collection including research on relatives of crops.
 - b. Laboratory for research on seed storage techniques such as seed longevity, genetical stabilization for stored seed under cold and dry conditions and storage techniques for recalcitrant seed.
 - c. Laboratory for research on in vitro cultivation of vegetative propagated plants.
 - d. Laboratories for evaluation of plant genetic resources and for research on evaluation technology such as genetical analysis, physiological and ecological analysis, biochemical analysis and tolerance to environmental conditions.
 - e. Laboratory for information management of plant genetic Resources.

1.3 Facilities for coordination and communication of systematic management of plant genetic resources as a national centre.

- a. Administration Office
- b. Lecture Room
- c. Conference Room
- d. Herbarium Room
- e. Computer Room

1.4 Other necessary facilities for the Project.

2. Equipment

- 2.1 Equipment for seed storage and in vitro conservation of vegetative propagated plants.
- 2.2 Equipment for Research and Development
- 2.3 Equipment for coordination and communication
- 2.4 Equipment for collection of plant genetic resources. 6/10

Necessary measures to be taken by the Government of the Democratic Socialist Republic of Sri Lanka are as follows:-

1. To secure a lot of land for the site of the Project;
2. To clear, level and reclaim the site when needed;
3. To construct the gate and fence in and around the site when needed;
4. To provide facilities for distribution of electricity, water supply, drainage and other incidental facilities when needed;
 - 4.1 Electricity distribution line to the site
 - 4.2 Water supply to the site
 - 4.3 Main drainage line to the site
 - 4.4 Telephone trunk line to the main distribution frame (MDF) of the building
 - 4.5 General furniture
 - 4.6 Other incidental facilities
5. To bear commissions ^(to be determined) to the Japanese foreign exchange Bank for the banking services based upon the Banking Arrangement; *(18/10)*
6. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation in Sri Lanka;
7. To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contract such facilities as may be necessary for their entry into Sri Lanka and stay therein for the performance of their work;
8. To assign the necessary staff for the proposed activities of the Plant Genetic Resources Centre upon the execution of the Project; *(18/10)*

SW

9. To maintain and use properly and effectively the facilities constructed and equipment purchased under the grant aid.

10. To bear all the expenses other than those to be borne by the grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.

6/10

2) The preliminary study on Technical cooperation

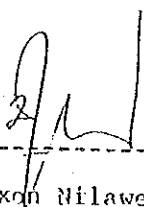
MINUTES OF DISCUSSIONS
ON
THE RESEARCH PROJECT FOR PLANT GENETIC RESOURCES
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct the Preliminary study on the Research Project for Plant Genetic Resources (hereinafter referred to as the "Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Democratic Socialist Republic of Sri Lanka, the Team, headed by Dr. Shinji WATANABE Chief, National Institute of Agro-Biological Resources, Ministry of Agriculture, Forestry and Fisheries, Japan, from 6th to 11th July 1986. The Team had a series of discussions on the Project with the officials of the Government of the Democratic Socialist Republic of Sri Lanka and conducted a field study.

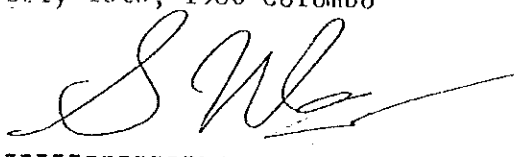
As the result of the discussions, both sides have agreed to recommend to their respective Governments to take further steps for early implementation of technical cooperation for the project based on the tentative framework attached as Annex 1.

Members list of both sides is attached as Annex 11.

July 10th, 1986 Colombo



Mr. Dixon Nilaweera
Acting Secretary
Ministry of Agricultural
Development and Research



Dr. Shinji WATANABE
Team Leader
The Preliminary Study Team
JICA

TENTATIVE FRAME WORK OF TECHNICAL COOPERATION
ON
THE RESEARCH PROJECT FOR PLANT GENETIC RESOURCES
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

1. Purpose of the Project

The Project is to be carried out in the Plant Genetic Resources Centre in Peradeniya for the purpose of promoting crop improvement in Sri Lanka through activities for collection, conservation, evaluation and utilization of Plant Genetic Resources of crops such as rice, coarse grains, pulses, root crops and so on.

2. Executing Organisation

The Central Agricultural Research Institute (Peradeniya, in Kandy District), of the Department of Agriculture of the Ministry of Agricultural Development and Research will implement the Project with technical cooperation by the Government of Japan.

3. DURATION OF TECHNICAL COOPERATION

Five (5) years from the date of signing the Record of Discussions for the Project.

4. ACTIVITIES OF THE PROJECT

(1) To carry out the following activities and research

- (i) Exploration and Collection of Plant Genetic Resources
- (ii) Classification and Evaluation of Plant Genetic Resources
- (iii) Conservation and Multiplication of Plant Genetic Resources
- (iv) Managing Information about Plant Genetic Resources.

(2) To exchange necessary information, data and research materials for the above subjects.

S W

2/

...2/-

5. MEASURES TO BE TAKEN BY JAPANESE SIDE

(1) Dispatch of Experts

(i) The field of Japanese Experts on the long term basis are as follows :-

- a. Genetic Resources Management
- b. Genetic Resources Research
- c. Coordination and Agronomy

(ii) In addition to the above long term experts, short term experts of following fields would be dispatched depending on necessities.

- a. Exploration and Collection
- b. Storage Technology of Genetic Resources
- c. Cell Biology
- d. Classification and Evaluation of different kinds of plant groups
- e. Information Management System
- f. Other fields, if necessary

(2) Acceptance of counterpart personnel

Several counterpart personnel would be accepted for training in Japan during the cooperation period.

(3) Provision of equipment

Necessary equipment and materials for implementation of the Project would be provided within budgetary limitation for the Project.

6. MEASURES TO BE TAKEN BY SRI LANKAN SIDE

- (1) Provision of land, building and facilities for the Project
- (2) Assignment of necessary number of counterpart personnel
- (3) Budgetary allocation necessary for the implementation of the Project.

7. ESTABLISHMENT OF JOINT COMMITTEE

For smooth implementation of the Project, the joint committee shall be established as follows :-

SW

2/

...3/-

(I) Members

Chairman : Secretary of the Ministry of Agricultural
Development and Research

Sri Lankan Side

- 1) The Director, Department of Agriculture of the
Ministry of Agricultural Development and Research.
- 2) The Deputy Director(Research), the Department of
Agriculture of the Ministry of Agricultural
Development and Research.
- 3) The Deputy Director, the Central Agricultural Research
Institute of the Department of Agriculture.
- 4) Botanist, the Division of Botany, Central Agricultural
Research Institute.
- 5) Representative of the Department of External Resources.
- 6) Representative of the Budget Division of the Treasury.

Japanese Side

- 1) Team Leader
- 2) Experts to be dispatched from Japan.
- 3) Coordinator
- 4) The Representative of JICA SRI LANKA Office.
- 5) Other experts and personnel concerned to be
dispatched by JICA Head Quarters, if necessary.

NOTE:

Official(s) of the Embassy of Japan may attend the Joint
Committee as an observer.

(II) Functions

1. To work out the annual plan of the Project.
2. To discuss budgetary plan of the Project.

SW

24
...4/-

3. To review the Project activities.
4. To deal with other specific matters concerning the Project.

(III) Meetings of the Joint Committee

The Joint Committee is to be held regularly, at least twice a year and whenever necessity arises.

SW

al

....

1. Sri Lankan Side

- (i) Mr. Dixon Hilaweera,
Acting Secretary,
Ministry of Agricultural Development and Research.
- (ii) Dr. Irwin Gunawardene,
Director,
Department of Agriculture.
- (iii) Dr. S. D. G. Jayawardana,
Botanist,
Department of Agriculture.
- (iv) Mr. C. H. De Alwis Jayasinghe,
Deputy Director,
Ministry of Agricultural Development and Research.

2. Japanese Side

- (i) Dr. Shinji WATANABE,
Chief,
Germ Plasm Seed Storage Center,
National Institute of Agro-biological Resources,
Ministry of Agriculture, Forestry and Fisheries (MAFF)
- (ii) Mr. Kenji NIINO,
Deputy Director,
International Cooperation Div,
International Dept.,
Economic Bureau, MAFF.
- (iii) Mr. Satoshi MACHIDA,
Staff,
Technical Affairs Div.,
Agricultural, Forestry & Fisheries
Planning & Survey Dept.,
Japan International Cooperation Agency.
- (iv) Mr. Atsushi MATSUMOTO,
Embassy of Japan in Sri Lanka.

SW

2/1

3) The basic design study

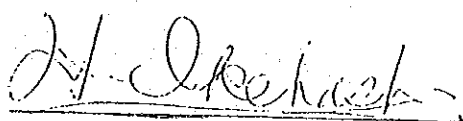
MINUTES OF DISCUSSIONS
ON
THE RESEARCH INFRASTRUCTURE DEVELOPMENT PROJECT FOR
PRESERVATION AND UTILIZATION OF PLANT GENETIC RESOURCES
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA.

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a basic design study on the Research Infrastructure Development Project for Preservation and Utilization of Plant Genetic Resources (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Democratic Socialist Republic of Sri Lanka, a study team headed by Dr. Hiroshi Ikehashi, Genetic Resources Coordinator, National Institute of Agrobiological Resources, Ministry of Agriculture, Forestry and Fisheries from 26th July to 14th August 1986.

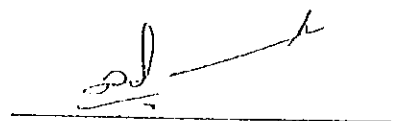
The team had a series of discussions on the Project with the officials of the Government of the Democratic Socialist Republic of Sri Lanka headed by Mr. N.V.K.K. Weragoda, Secretary, Ministry of Agricultural Development and Research and conducted a field study in Kandy District.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

4th August 1986



Dr. Hiroshi Ikehashi
Team Leader



Mr. N.V.K.K. Weragoda
Secretary

Major points of understanding between the Ministry of
Agricultural Development and Research and the
Japanese International Cooperation Agency.

Basic concept for the Plant Genetic Resources Centre.

Both parties fully agreed on the need to establish a new Plant Genetic Resources Centre (PGRC) in Sri Lanka for the preservation and utilization of genetic resources.

Principal concept of the PGRC should be based on the understanding that the Government of the Democratic Socialist Republic of Sri Lanka, takes necessary steps to develop this Centre to a national centre to promote all activities on conservation and utilization of plant genetic resources. Considering the magnitude of grant aid, proposed responsibilities and areas of research, it is recommended that the PGRC be placed at a considerably higher position in the administrative structure of the Department of Agriculture to facilitate adequate administrative and financial support.

This centre is to establish strong working linkages with the existing research divisions of the CARI and other regional research centres of the Department of Agriculture, Universities and other National Research Institutes. Facilities of this centre should be jointly utilized in executing the National Research Programme.

Major Laboratories and Related Facilities of the Proposed PGRC

1. Laboratory for Seed Storage
 - 1.1 Storage facilities for long, medium and short term storage.
 - 1.2 Germination test and seed inspection room.
 - 1.3 Seed drying and seed packing room.

2. Laboratory for Vegetatively Propagated Plants.
 - 2.1 Medium preparation room
 - 2.2 Storage room for cultured tissues.

3. Laboratory for data Management.
 - 3.1 Mini-computer based data processing and management functions such as cataloging, inventoring and computer data processing and so on

4. Laboratory for exploration and collection

5. Laboratory for evaluation

6. Laboratory for visiting scientists

7. Common facilities
 - 7.1 Room for balances
 - 7.2 Room for microscopes
 - 7.3 Room for incubators

8. Facilities for Administration
 - 8.1 Director's room
 - 8.2 Administration office
 - 8.3 Lecture rooms
 - 8.4 Exhibition corner
 - 8.5 Conference hall
 - 8.6 Visitors room and related facilities

9. Workshop and other related field management facilities.
 - 9.1 Screen houses for:
 - Entomological studies
 - Pathological studies
 - Physiological studies
 - Tissue culture studies
 - Germplasm studies
 - 9.2 Sheltered drying facilities
 - 9.3 Processing workshop
 - 9.4 Storage facilities for field equipment, soil and agro chemicals etc.
 - 9.5 Garages for vehicles and tractors
 - 9.6 Maintenance room
 - 9.7 Field workers' room
 - 9.8 Potting shed

Handwritten initials/signature

CS/04

10. Equipment is to be installed to facilitate basic function of collection, storage, primary evaluation and data management of seed propagated and vegetatively propagated plants. Due consideration will be given for equipment needs to accommodate advanced research capabilities in future.

11. Necessary measures to be taken by the Government of the Democratic Socialist Republic of Sri Lanka as listed in the minutes of the discussion of the preceding mission are reconfirmed by both parties here.

G/OK

J.L.O

4) The draft report confirmation

Minutes of Discussions
on
The Research Infrastructure Development Project
for
Preservation and Utilization of Plant Genetic Resources
in
The Democratic Socialist Republic of Sri Lanka

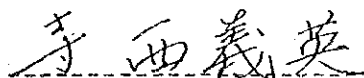
In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka for Grant Assistance for the Research Infrastructure Development Project for Preservation and Utilization of Plant Genetic Resources (hereinafter referred to as "the project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Democratic Socialist Republic of Sri Lanka the study team from 28th July to 14th August 1986.

As a result of the study, JICA prepared a Draft Final Report of the study and dispatched a mission, headed by Mr. Yoshihide Teranishi, First Basic Design Study Division, Grant Aid Planning and Survey Department, JICA, to explain and discuss it starting from 28th October to 6th November, 1986.

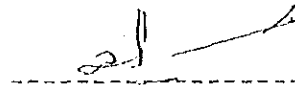
The team had a series of discussions on the Report with the officials of the Government of the Democratic Socialist Republic of Sri Lanka headed by Mr. N.V.K.K. Weragoda, Secretary, Ministry of Agricultural Development and Research.

Both parties had agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

4th November, 1986



Mr. Yoshihide Teranishi
Leader - Draft Report Team
of Basic Design Study,
Japan International Cooperation
Agency.



Mr. N.V.K.K. Weragoda
Secretary,
Ministry of Agricultural
Development and Research.

Major Points of Understanding

1. The Sri Lankan side principally agreed to the basic design proposed in the Draft Final Report and appropriate alterations, as per annexure I, will be incorporated in the Final Report.
2. The Final Report (10 copies in English) will be submitted to the Democratic Socialist Republic of Sri Lanka in December 1986.
3. The Sri Lankan side understood the system of Japan's Grant Aid Program and confirmed that the Government of the Democratic Socialist Republic of Sri Lanka will take necessary measures, as per annexure II, upon execution of the grant aid for the Project by the Government of Japan.

8.T.

C/11/04

ANNEXURE I

Alterations agreed by both Parties

1. Director's room to be located in the 1st floor and to attach a secretary cum guest room.
2. Visiting scientists rooms to be located in the ground floor.
3. Reception and store room to be provided in the entrance hall to conference room.
4. Clean bench room, incubator room and tissue culture storages to be isolated from the common laboratory area.
5. Toilet facilities to be provided in each wing of the first floor of laboratory building.
6. Ramp way to the 1st floor to be provided.
7. System of waste water treatment to be reconsidered from the view point of easy operation and maintenance.
8. Pumps for water supply to be purchased in Sri Lanka.
9. Existing experimental field and irrigation canals which shall be damaged by the construction work to be restored.
10. Experimental field to be enclosed with net fence for protection of plants.
11. The location of field management related facilities and infrastructure facilities to be revised as per attached site plan.
12. Site area was reconfirmed as attached site plan.
13. Stand by cooling condensor for long term storage must be considered.

Y.T.

6/11/64

-3-

14. The following experimental equipments to be supplemented:

Item	Q'ty	Room
----	----	----
a. Ladder	3	Seed Storage(long,medium,short)
b. Seed enlarger	1	Seed inspection & germination test
c. Book binding set	1	Administration office
d. Net screen	1 lot	Net House

M.T.

6/10/54

ANNEXURE II

1. Measures related to the execution of the Project.

1.1. Works related to construction:

- a) Site clearance,
- b) Relocation of telephone line,
- c) Relocation of bus stop,
- d) Electricity-supply wiring, branching 50 metre off from existing 33 KV line to the site,
- e) Wiring of underground telephone cable to the MDF to be installed in Administration building,
- f) Disposal of rainwater through underground pipe,
- g) Landscaping (Turffing 720 m², planting),
- h) Furnitures and utensils,
- i) Gate and fence in and around the site.

1.2. Formalities and procedural matters:

- a) Expenses associated with banking arrangements,
- b) Expenses for import tax to be imposed upon the construction equipment and materials; experimental equipmenmt which shall be brought into Sri Lanka for the implementation of the Project,
- c) Prompt action concerning customs clearance,
- d) Arrangements for exemption of customs duty, domestic taxes and other public charges on the Japanese nationals who shall be involved in the implementation of the Project based on the verified contract,
- e) Provision of conveniences to the said Japanese nationals concerning their entry and stay in Sri Lanka for the purpose of performing their duties.

J.T.

11/04

ANNEXURE II contd...

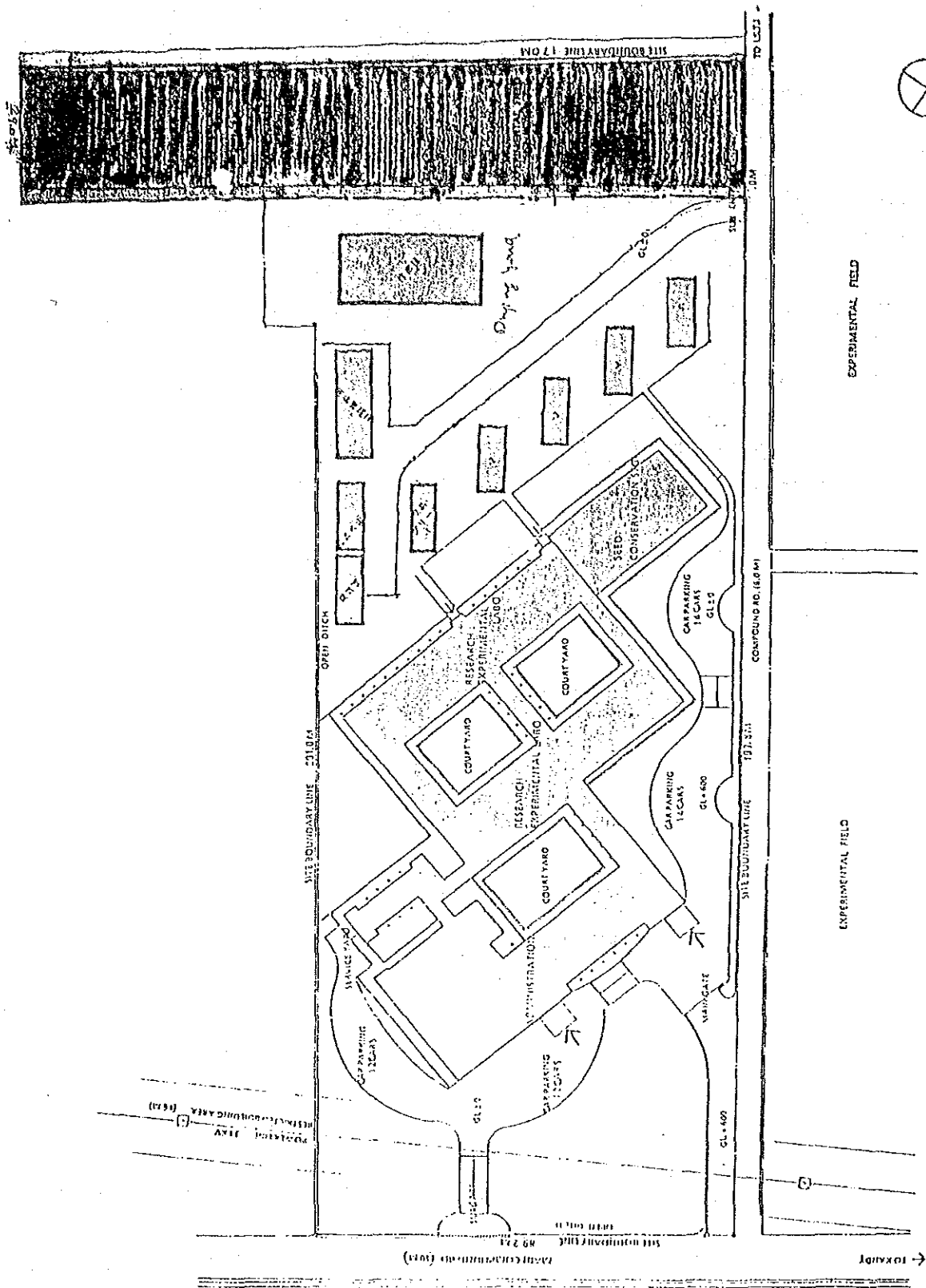
2. Measures related to operation of the proposed Plant Genetic Resources Centre.

2.1. Assignment of necessary staff according to the proposed manpower plan, i.e. Research staff (existing in the Department of Agriculture) and creation of new cadre of middle level technicians (2 Nos.) to be associated with Japanese consultants during building construction and installation of equipment.

2.2. Budgetary provisions to be made by Sri Lankan side for proper and effective operation and maintenance of the centre.

M.T.

6/1/84



SITE PLAN 0 TO 20 30M 1

J.L.

CA/04

3. Cooperative Officials in the Survey

The following persons have cooperated with the Study Team in conducting the field survey for this project.

o Concerned persons on the Sri Lankan side:

Ministry of Agricultural Development and Research (M.A.D.R.)

Mr. Gamini Jayasuriya	Minister
Mr. N.V.K.K. Waragoda	Secretary
Mr. Dixon Nilaweera	Acting Secretary

Department of Agriculture

Dr. Irwin Gurawarudena	Director
Dr. H.M.E. Heath	Deputy Director of Agricultural
Dr. D.E.F. Suraweera	Deputy Director, Economics and Projects
Mr. A.M. Abeyratne	Chief Account

Central Agricultural Research Institute (C.A.R.I.)

Dr. H. Fernando	Deputy Director of Research
Dr. S.D.G. Jayawarudene	Botanist
Mr. E.B. Hindagala	Research Officer
Mr. S. Balendira	Research Officer
Mr. M.H. Mendis	Research Officer
Mr. A. Samarajeewa	Research Officer

Batalagoda C.R.B.S.

Mr. M.P. Dhanapala	Deputy Director of Research
--------------------	-----------------------------

Ministry of Finance and Planning

Mr. S. Weerapana	Additional Director, Department of External Resources
------------------	--

o Concerned persons on the Japanese side

The Embassy of Japan in Sri Lanka

Mr. Hiroshi Otaka	Ambassador extraordinary and Plenipotentiary
Mr. Toshinao Urabe	Councilor
Mr. Kazuhiko Maruyama	First Secretary
Mr. Masashi Sakuramata	Second Secretary
Mr. Atsushi Matsumoto	Third Secretary

JICA Sri Lanka Office

Mr. Jiro Hashiguchi	Resident Representative
Mr. Tetsuo Amagai	Assistant Resident Representative

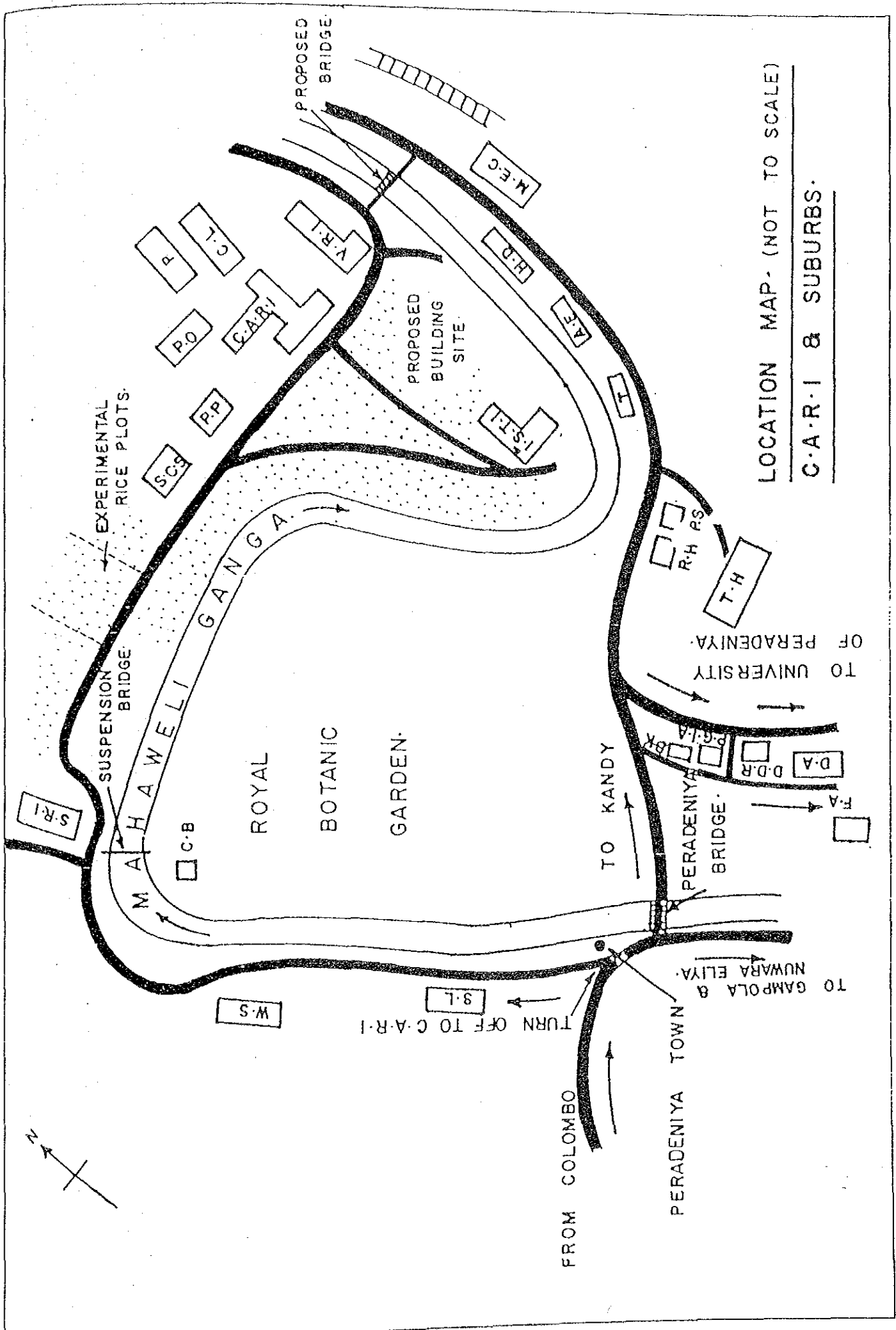
Tropical Agriculture Research Center

Dr. Hirohiko Morita	Expert dispatched from Japan
Dr. Takashi Kobayashi	Expert dispatched from Japan

APPENDIX II

1. Relevant Data on Project
2. Outline of the Allied Institute

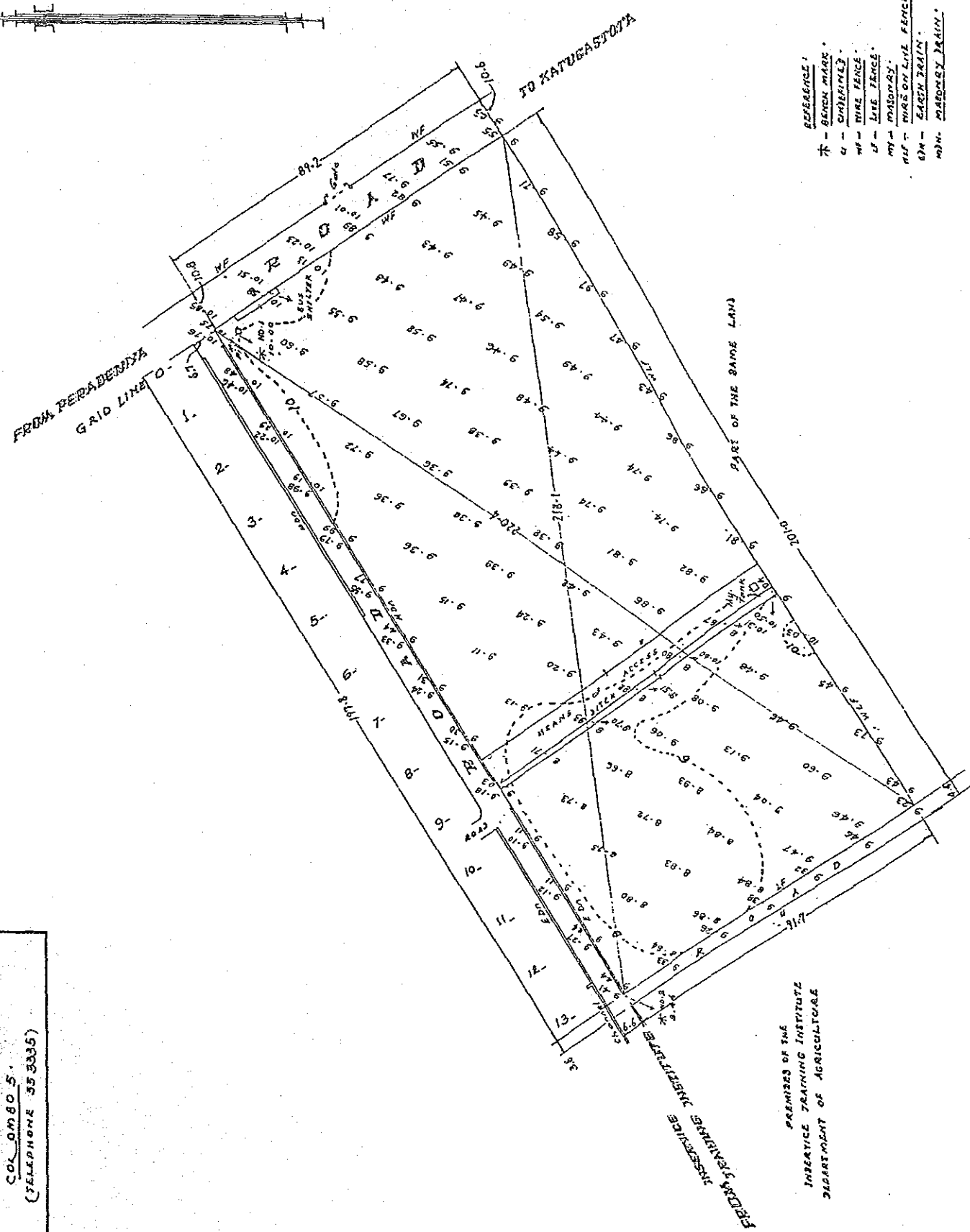
1. Relevant Data on Project
- 2) Existing facilities around the project site



CARI - Central Agricultural Research Institute
 ISTI - In Service Training Institute
 VRI - Veterinary Research Institute
 PO - Plant Quarantine Office
 PP - Plant Protection Office
 SES - Seed Certification Service
 P - Publication Unit
 CL - Central Library
 SRI - Soyabean Research Institute
 WS - Workshop
 SL - Seed Laboratory
 BK - Bank
 PGIA - Post Graduate Institute of Agriculture
 FA - Faculty of Agriculture
 DA - Director of Agriculture - office
 DDR - Deputy Director of Agricultural Research
 PS - Police Station
 RH - Rest House
 AE - Agricultural Extension Office
 T - Buddhist Temple
 HD - Horticultural Division
 MEC - Minor Exports Crops Department
 TH - Teaching Hospital
 CB - Circuit Bunglow

PLAN No. 2022

2) Survey map of the site



D. JOY. 3E. SIV. YA. F.S.I.
LICENSED SURVEYOR AND LEVELLER
COURT COMMISSIONER AND VALUER
103 B. RAILWAY AVENUE
COLOMBO 5.
(TELEPHONE 55 3335)

SCALE: 1 : 1000
PLAN

DEPICTING THE SURVEY OF PREMISES FOR PROPOSED
CENTRAL AGRICULTURAL RESEARCH INSTITUTE
SITUATED
OFF KANDY - COLOMBO ROAD AT GAMBODIYA, PERADENYA
WITHIN THE DISTRICT OF KANDY
CENTRAL PROVINCE

CONTAINING IN EXTENT : 18,662 ACRES, 4008 PERCHES
1,8666 04.2 .1783

SPOT HEIGHTS OBSERVED AT 15 METRE INTERVALS ARE INDICATED IN THIS PLAN
TWO BENCHMARKS (NOS. 1 AND 2) ARE SHOWN AT THE NORTH-WESTERN AND SOUTH-
WESTERN CORNERS OF THE LAND

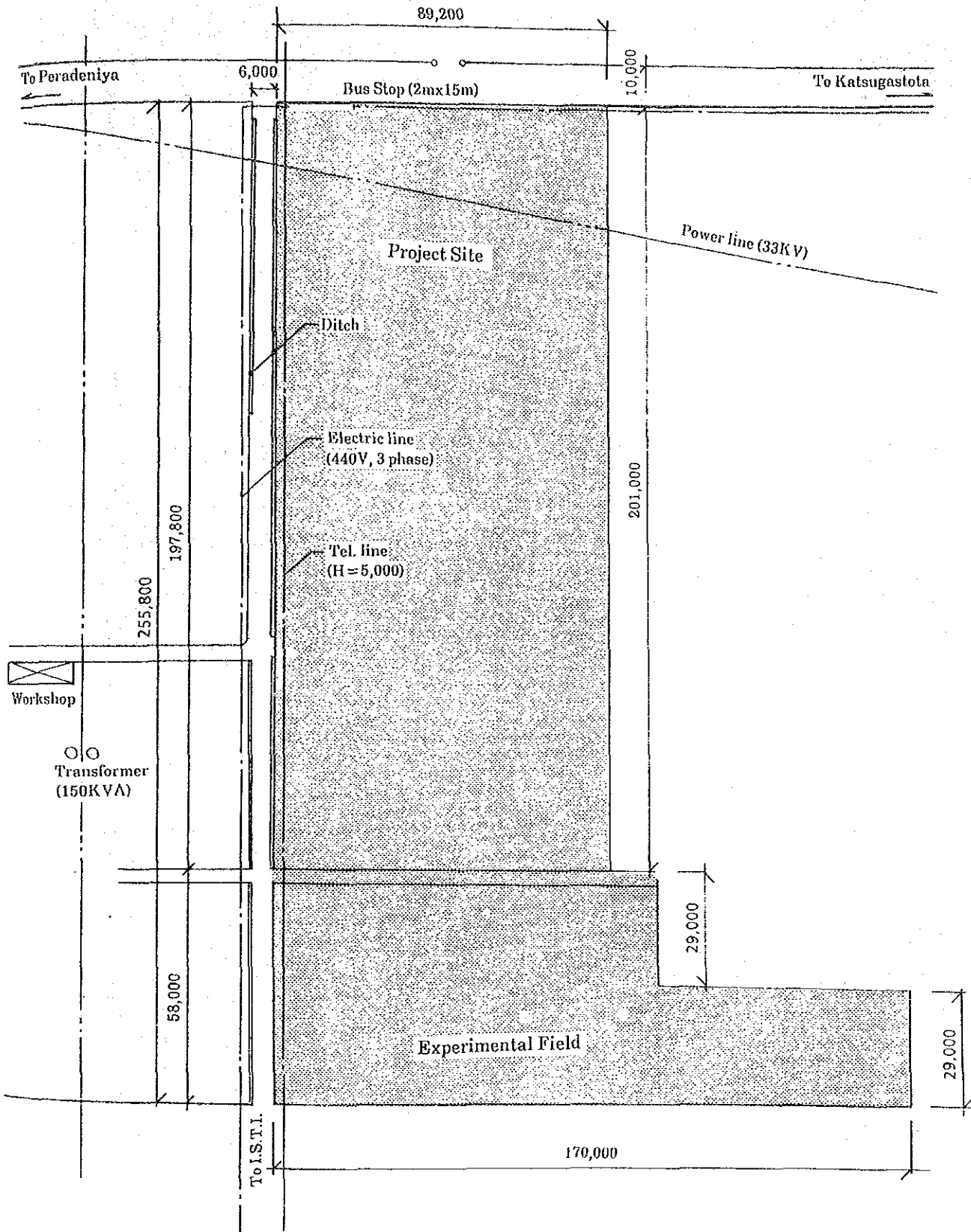
ASSUMED DATUM IS 10.00 METRES AT BENCHMARK NO. 1.

SURVEYED AND LEVELLED ON 10TH JUNE 1966

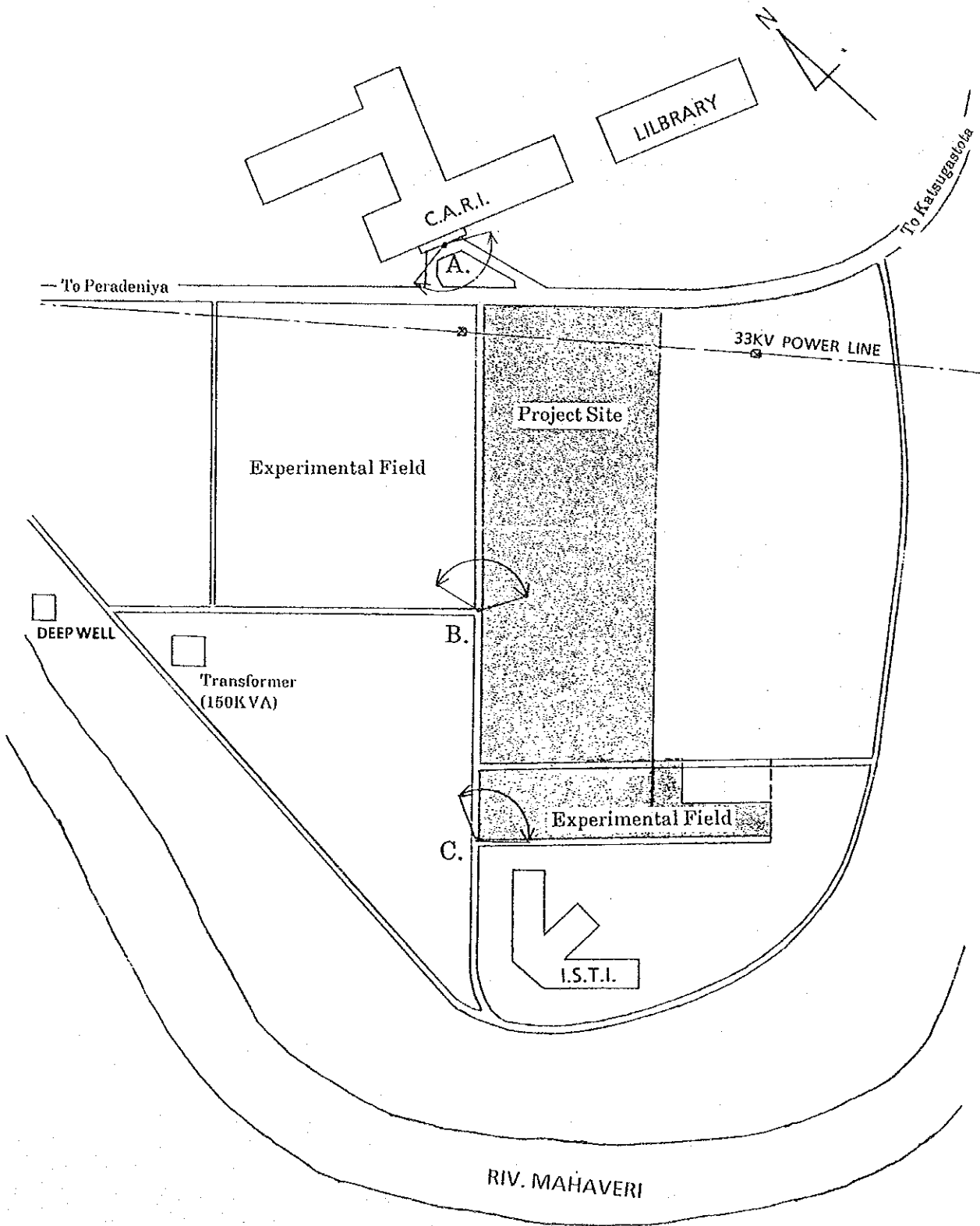
D. J. Siv. Ya.

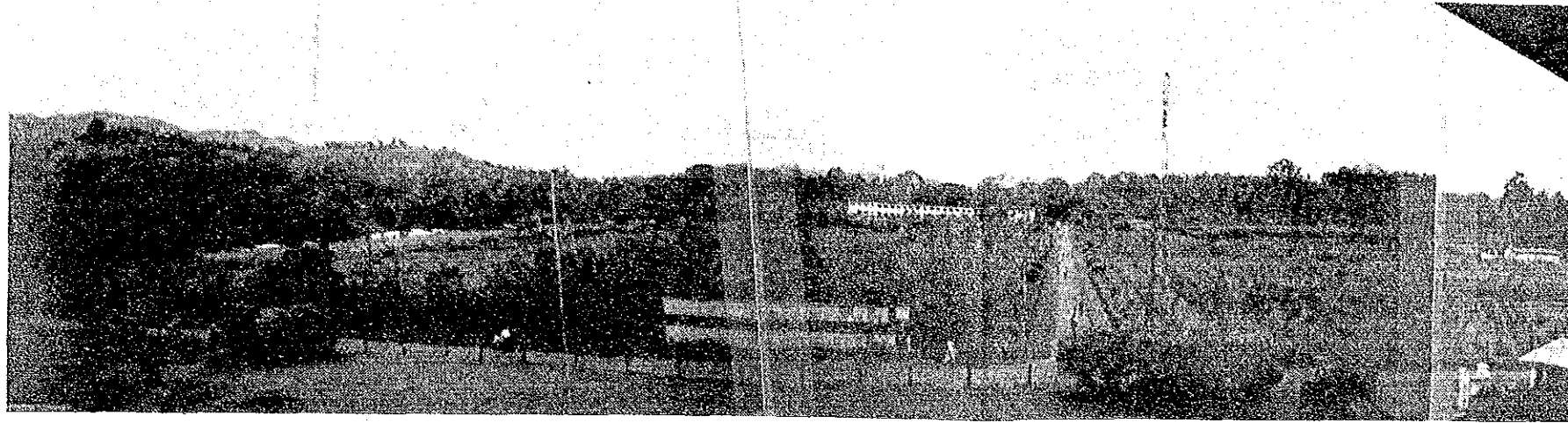
LICD. SURVEYOR AND LEVELLER
13TH JUNE 1966

3) Drawing of the present condition of the site



4) Photographs of the site

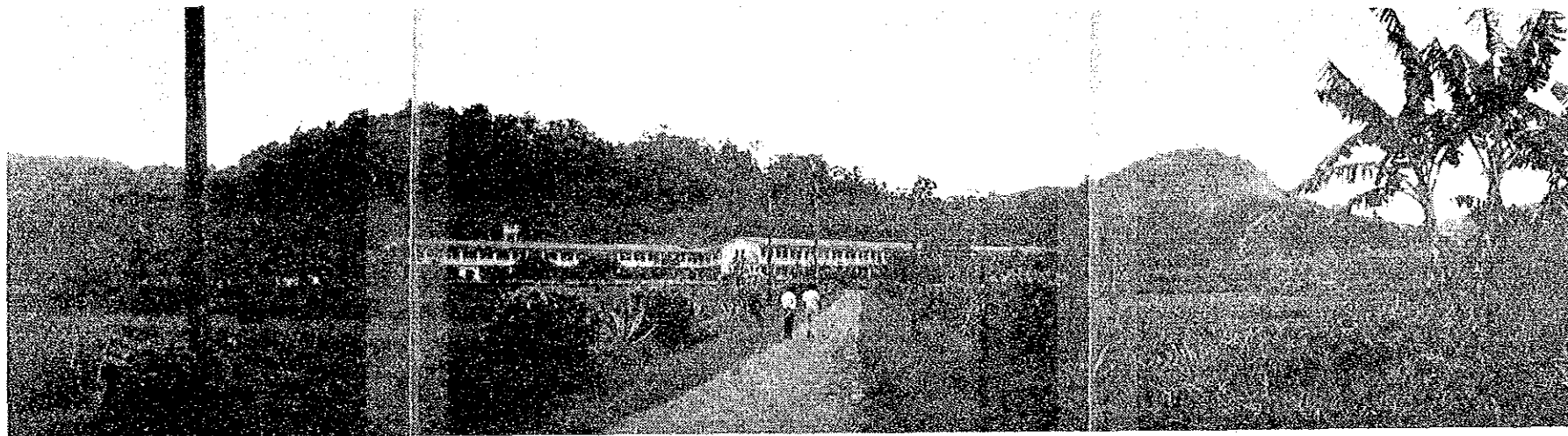




Panoramic view of the site



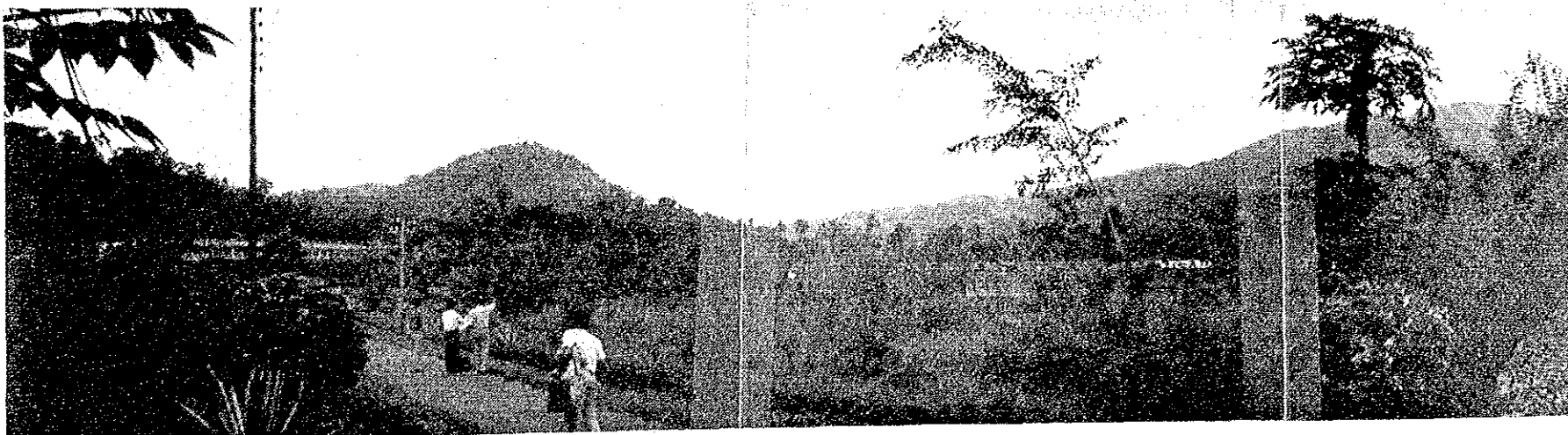
33KV power line crossing the site



Panoramic of the site and experimental field



Bas-stop for CARI's staff



Opposite direction view of the site



Telephone line along with the boundary

5) Geographic survey data

SITE INVESTIGATION PROGRAMME
FOR THE PROPOSED BUILDING AT
GANNORUWA , KANDY

AGRICULTURAL RESEARCH INSTITUTE

GEOTECH LIMITED
7 KYNSEY TERRACE
COLOMBO 8.

TEL: 91052 , 95536

CONTENTS	PAGE
1. Introduction	1
2. Description of Site	2
3. Boring	2
4. Standard Penetration Tests	2
5. Ground Water	3
6. Laboratory Test	3
7. Conclusion	3
APPENDIX A : Location Map	4
APPENDIX B : Borehole Logs & Test Results	6

SITE INVESTIGATION PROGRAMME
FOR THE PROPOSED BUILDING AT
GANNORUWA, KANDY

1. INTRODUCTION

In June, 1986 Messrs Geotech Limited was instructed to carry out a Soil Investigation Programme for the proposed building at Gannoruwa, Kandy.

The investigation requirements were:

- (a) Five numbers boreholes to be drilled.
- (b) Borehole No: 1 to be taken down to 15m. and the other boreholes to be taken down to 10m.
- (c) Standard penetration tests to be carried out at every 1.5m. increment in depth.
- (d) Disturbed samples to be taken at every 1.5m. depth.
- (e) Ground water level to be measured at every borehole.
- (f) Undisturbed samples to be taken in cohesive soils.

The investigations were carried out in June, 1986, under the supervision of the geotechnical Engineers of Messrs Geotech Limited.

This report contains a factual account of the field work done and a classification report of the samples collected together with results of laboratory tests carried out.

A recommendation as to possible allowable bearing pressure of soil is also given.

It is understood that the building to be sited on the site would be a reinforced concrete frame structure two to three stories high.

The building has not yet been designed and therefore the foundation type could be selected based on this report.

2. DESCRIPTION OF SITE

The site is located within the School of Agriculture at Peradeniya. The strata on the site are generally lateritic soils in various stages of decomposition.

The clay has within it a considerable percentage of coarse fine sand the rock is found around 15m. depth.

3. BORINGS

The total of five boreholes were bored each to a depth as given in the detail borehole logs.

The borehole designated as BH1, BH2, BH3, BH4 and BH5. The locations of the boreholes are indicated in the plan attached.

The borehole logs mainly consist of the following:

- (a) The depth at which disturbed or washed samples were taken.
- (b) Visual description of the disturbed samples as taken from the boreholes.
- (c) Number of blows for SPT 30cm. penetration.
- (d) Depth of hole.
- (e) Height at which ground water was encountered.

4. STANDARD PENETRATION TESTS

In the normal standard penetration test, the 150mm. seating drive is followed by a 300mm. test drive and the N-value recorded on the borehole logs is the number of blows for the 300mm. test drive.

In these circumstances, the results of the tests are presented on the borehole logs in the following manner:

- (a) Where the 150mm. seating drive and part of the 300mm. test drive is carried out the number of blows for the partial test drive only is recorded on the borehole log thus (30) an N-value may be obtained by linear extrapolation of the number of blows recorded for the partial test drive.

- (b) If the total penetration is equal to or less than the 150mm. required for the seating drive the number of blows for the actual depth penetrated is recorded on the borehole logs thus (50) initial penetration only.

5. GROUND WATER

Static water level is indicated in each of the borehole logs. No requirements were made to install piezometric stand pipes. Hence, the water level indicated are those obtained approximately 24 hours after the drilling operations are completed. There was no significant difference between the ground water level at first meeting in drilling and 24 hours after the completion of drilling.

6. LABORATORY TEST

As the strata met with were mainly clays two triaxial test was done on samples obtained from BH1 and BH5. Plasticity index was determined on a number of samples and the results are attached.

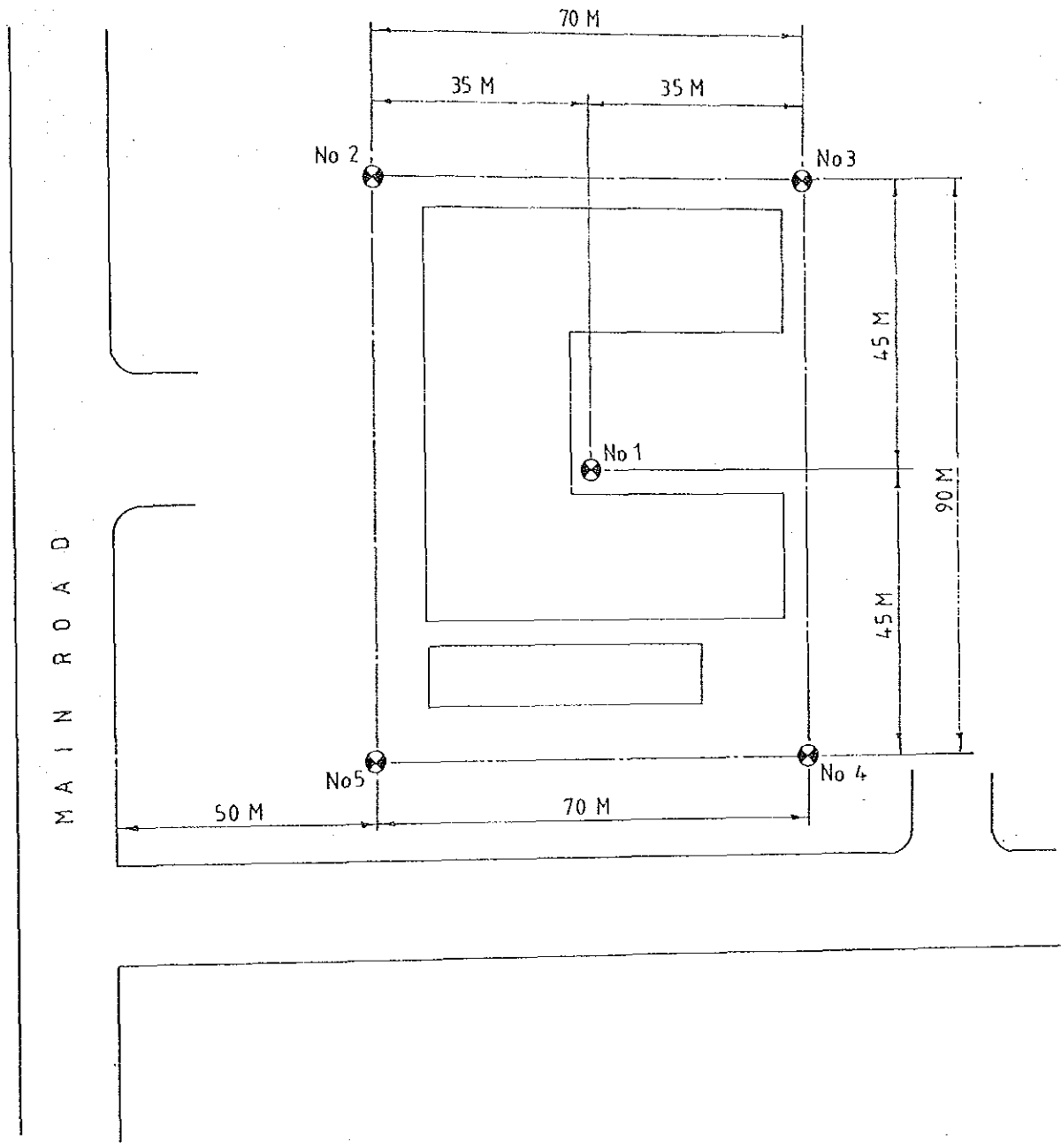
7. CONCLUSION

The strata within the site are generally stiff clay of lateritic origin. The clay is quite stiff and has within it a considerable percentage of coarse sand. The N-values are quite high beyond the 2m. depth and gives an average N-value of around 20.

The value of C_u is quite high giving a value of $120\text{K}^n/\text{m}^2$. This will indicate that the shear failure value of soil is quite high. However, it is recommended that a bearing pressure not exceeding one ton per square foot been used to the design of the foundation and the foundation could be placed at a depth of 1.5m. Such a bearing pressure would limit the settlement due to consolidation of the clay by dispersal of load. Actual values of settlement has not been calculated as consolidation tests were not done.

APPENDIX A

Location Map



GEOTECH LIMITED

PLAN SHOWING LOCATION OF BORE HOLES
PROPOSED AGRICULTURAL RESEARCH CENTRE
PERADENYA

APPENDIX B

Borehole Logs & Test Results

JOB No: G/198

CLIENT: A.R.I.

BH No. 01

DRILLING RIG Pilcon 1500

HOLE

CORE

CASING

DATE START 15.5.86 FINISH

DRILLING FLUID

OMM TO

OMM TO

CO.ORDINATES E N

BARREL TYPE

200 15.00

GROUND LEVEL

LOGGED BY

INCLINATION

BEARING

ROD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	(THICKNESS) DEPTH. R. L.	LEGEND
							TYPE	CHARACTERISTICS			
						1.00D 1.00-1.45 SPT;N=5			Soft, yellowish brown silty CLAY with occasional sand	1	
						2.50D 2.50-2.95 U100/26			Firm, yellowish brown, slightly plastic, silty CLAY with occasional sand	2	
						4.00D 4.00-4.45 SPT;N=22			Stiff, reddish brown/yellowish brown, mottled, lateritic silty CLAY	3	
						5.50D 5.50-5.95 SPT;N=30				4	
						7.00D 7.00-7.45 SPT;N=32				5	
						8.50D 8.50-8.95 SPT;N=34			Stiff, yellowish brown/reddish brown mottled, micaceous silty CLAY with occasional nodules	6	
										7	
										8	
										9	
										10	

GEOTECH LTD.

COMMENTS

SCALE 1:5

SHEET 1 OF 2

JOB No: G/198

CLIENT: A.R.I.

BH No. 01

DRILLING RIG

DRILLING FLUID

BARREL TYPE

LOGGED BY

HOLE

CORE

CASING

DATE START FINISH

CO.ORDINATES E N

GROUND LEVEL

INCLINATION

BEARING

RQD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	(THICKNESS)	DEPTH: R.L.	LEGEND
							TYPE	DIP ON CORE				
						10.00-10.45 SPT;N=30					11	
						11.50D 11.50-11.95 SPT;N=23					12	
						13.00D 13.00-13.45 SPT;N=18					13	
				13.65 V					Firm, light brown, kaolinized, micaceous silty CLAY (completely weathered rock)		14	
									Borehole terminated at 15.00 m		15	
											16	
											17	

GEOTECH LTD.

COMMENTS

SCALE 1:50

SHEET 2 OF 2

JOB No: G/198

CLIENT: A.R.I. &

BH No. 02

DRILLING RIG <u>Pilcon 1500</u>	HOLE		CORE		CASING		DATE START _____	FINISH _____
DRILLING FLUID _____	OMM	TO	OMM	TO	OMM	TO	CO.ORDINATES E _____ N _____	
BARREL TYPE _____	200	10.00					GROUND LEVEL _____	
LOGGED BY _____							INCLINATION _____	
							BEARING _____	

RQD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	(THICKNESS) DEPTH: R. L.	LEGEND
							TYPE	DIP ON CORE			
						1.00 1.00-1.45 SPT;N=4			Soft, brown, silty CLAY with occasional quartz pebbles	1	
						2.50D 2.00-2.95 U10u/25			Firm, yellowish brown, slightly plastic, silty CLAY with occasional sand	2	
						4.00D 4.00-4.45 SPT;N=25			Stiff, yellowish brown/white, mottled, silty CLAY with occasional sand	4	
						5.50D 5.50-5.95 SPT;N=25			Stiff, yellowish brown/white, mottled, silty CLAY with occasional sand	5	
						7.00D 7.00-7.45 SPT;N=17				7	
						8.50D 8.50-8.95 SPT;N=16				8	
						9.50D 9.50-9.95 SPT;N=19			Completely weathered, altered brown, very weak, partly kaolinized micaceous rock	9	
										10	

GEOTECH LTD.

COMMENTS

Borehole terminated at 10.00 m

SCALE 1:50

SHEET 1 OF 1

JOB No: G/198

CLIENT: A.R.I.

BH No. 03

DRILLING RIG	HOLE		CORE		CASING		DATE START	FINISH
	OMM	TO	OMM	TO	OMM	TO	CO.ORDINATES E	N
DRILLING FLUID	200	10.00					GROUND LEVEL	
BARREL TYPE							INCLINATION	
LOGGED BY							BEARING	

RQD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	DEPTH. (THICKNESS) R. L.	LEGEND
							TYPE	DIP ON CORE			
						1.00D 1.00-1.45 SPT;N=6			Soft, yellowish brown silty CLAY with occasional sand	1	
						2.50D 2.50-2.95 SPT;N=24			Firm, yellowish brown, silty CLAY with quartz gravels	2	
						5.50D 5.50-5.95 SPT;N=12			Firm, yellowish brown/brown mottled micaceous silty CLAY with some completely weathered rock fragments	5	
						7.00D 7.00-7.45 SPT;N=19				7	
						8.50D 8.50-8.95 SPT;N=20			Completely weathered, altered brown very weak micaceous rock	9	
										10	

GEOTECH LTD.

COMMENTS

Borehole terminated at 10.00 m

SCALE 1:50

SHEET 1 OF 1

JOB No: G/198 CLIENT: A.R.I. BH No. 04

DRILLING RIG <u>Pilcon 1500</u>	HOLE		CORE		CASING		DATE START	FINISH
DRILLING FLUID	OMM	TO	OMM	TO	OMM	TO	CO.ORDINATES E N	
BARREL TYPE	200	10.05					GROUND LEVEL	
LOGGED BY							INCLINATION	
							BEARING	

RQD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	(THICKNESS) DEPTH. R. L.	LEGEND
							TYPE	CHARACTERISTICS			
						1.00D 1.00-1.45 SPT;N=4			Soft, brown silty CLAY	1	
						2.50D 2.50-2.95 SPT;N=9			Firm, yellowish brown slightly plastic, silty CLAY with occasional sand	2	
						4.00D 4.00-4.45 SPT;N=21				3	
						5.50D 5.50-5.95				4	
						7.00D 7.00-7.45 SPT;N=26			Stiff, yellowish brown, silty CLAY with some coarse sand and gravel	5	
						8.50D 8.50-8.95 SPT;N=21			Firm, yellowish brown/brown mottled, silty CLAY with occasional sand	6	
						9.60D 9.60-10.05 SPT;N=24			Completely weathered, altered brown, very weak micaceous rock	7	
										8	
										9	
										10	

GEOTECH LTD. COMMENTS SCALE 1:50
 Borehole terminated at 10.05 m SHEET 1 OF 1

JOB No: G/198

CLIENT: A.R.I. &

BH No. 05

DRILLING RIG	HOLE	CORE	CASING	DATE START	FINISH
DRILLING FLUID	OMM TO	OMM TO	OMM TO	CO.ORDINATES E	N
BARREL TYPE	200 10.00			GROUND LEVEL	
LOGGED BY				INCLINATION	
				BEARING	

RQD (%)	TCR (%)	SCR (%)	FPM	CASING LEVEL	WATER LEVEL	IN-SITU TEST TYPES AND SAMPLES	DISCONTINUITY DESCRIPTION		LITHOLOGICAL DESCRIPTION	(THICKNESS) DEPTH. R. L.	LEGEND
							TYPE	CHARACTERISTICS			
						1.00D 1.00-1.45 U100/22			Soft, brown silty CLAY	1	
						2.50D 2.50-2.95 SPT;N=9			Firm, yellowish brown slightly plastic silty CLAY with occasional sand	2	
						4.00D 4.00-4.45 SPT;N=20				4	
						5.50D 5.50-5.95 SPT;N=28				5	
						7.00D 7.00-7.45 SPT;N=37			stiff, yellowish brown silty CLAY with occasional fine gravels	7	
						8.50D 8.50-8.95 SPT;N=47				8	
						9.50D 9.50-9.95 SPT;N=55				9	
										10	

GEOTECH LTD.

COMMENTS

Borehole terminated at 10.00 m

SCALE 1:50

SHEET 1 OF 1

RESULTS OF U U TRIAXIAL
COMPRESSION TESTS

PROJECT : A.R.I.

B.H. No. : 1

DEPTH : 2.50 - 3.00 m

SOIL DESCRIPTION : Stiff clay with a considerable percentage of coarse to fine sand. Yellowish brown in colour.

CELL PRESSURE (lbs/in²) : 10 ; 20 ; 40

DEVIATOR STRESS AT FAILURE (lbs/in²) : 23 ; 42 ; 49

STRAIN AT FAILURE % : 17 ; 20 ; 13

CU. (lbs/in²) : 15
: 105 Kn/m²

DIAMETER : 9°

NATURAL MOISTURE CONTENT % : 31

WET DENSITY (lbs/ft³) : 105

DRY DENSITY (lbs/ft³) : 80

B.H. No. : 5

DEPTH : 1.00 - 1.50 m

SOIL DESCRIPTION : Stiff clay with a considerable percentage of coarse to fine sand. Yellowish brown in colour.

CELL PRESSURE (lbs/in²) : 10 ; 20 ; 40

DEVIATOR STRESS AT FAILURE (lbs/in²) : 41 ; 41 ; 42

STRAIN AT FAILURE % : 18 ; 15 ; 20

CU. (lbs/in²) : 20
: 140 Kn/m²

DIAMETER : 1°

NATURAL MOISTURE CONTENT % : 30

WET DENSITY (lbs/ft³) : 108

DRY DENSITY (lbs/ft³) : 83

RESULTS OF THE ATTERBURG LIMITS TESTS OF
SOIL INVESTIGATION AT GANNORUWA

<u>B.H. No:</u>	<u>SAMPLE NO:</u>	<u>DEPTH (m)</u>	<u>L.L. %</u>	<u>P.L. %</u>	<u>P.I. %</u>
1	07	4.80-5.50	44	33	11
1	12	8.50-8.95	50	20	30
2	07	4.90-5.50	51	43	07
3	09	5.50-5.95	49	34	15
4	08	5.50-5.95	33	26	07

2. Outline of the Allied Institute

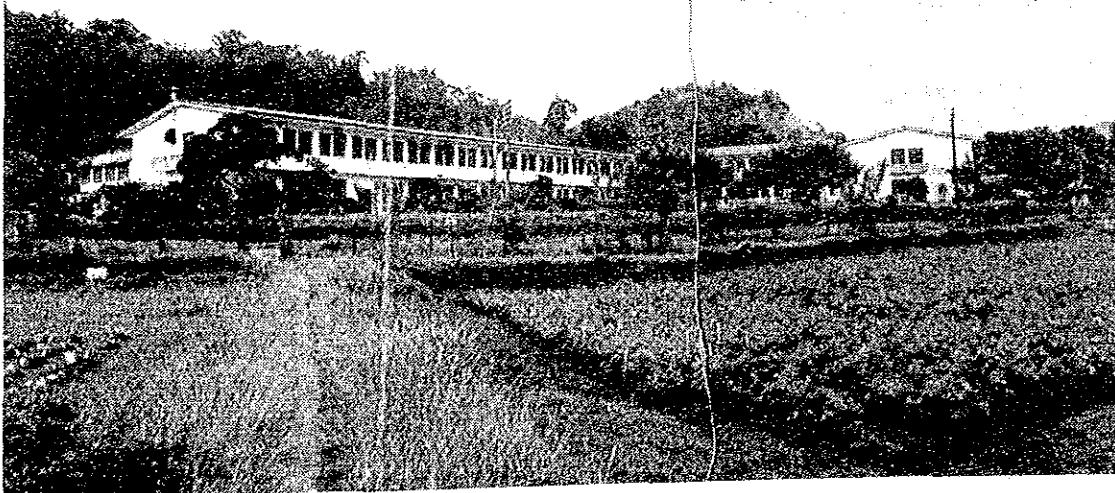
The Central Agricultural Research Institute (C.A.R.I.)

Agricultural Research Division, Department of Agriculture, Ministry of Agricultural Development and Research

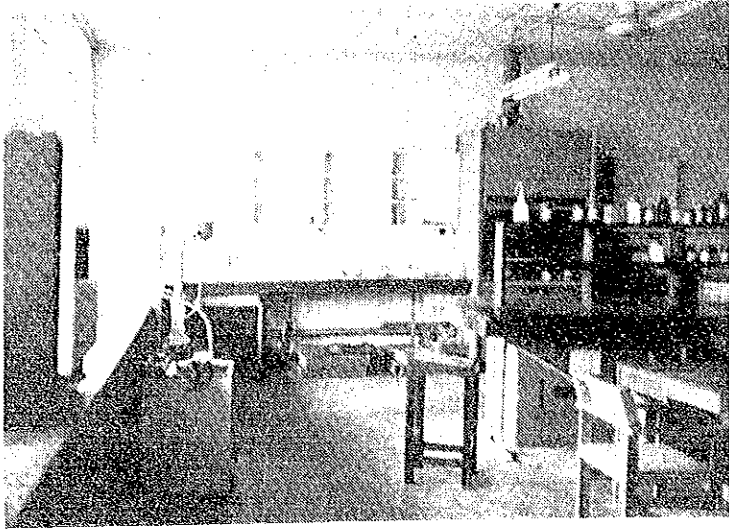
Location: Gamoruwa, Peradeniya, Kandy District

The Institute was established in 1958. Existing facilities were planned under the Colombo Plan and constructed in 1967 with the aid of the Government of Australia.

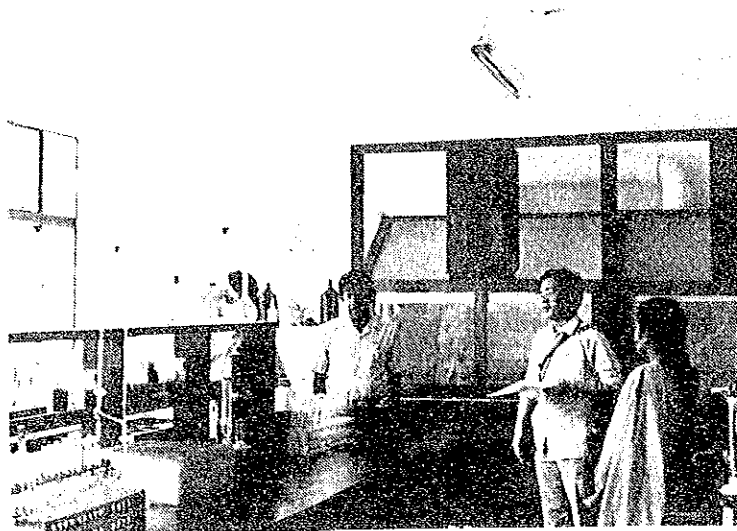
The Institute consists of ten research divisions: Agricultural Botany, Agricultural Chemistry, Plant Pathology, Entomology, Horticulture, Food Technology, Plant Quarantine and Protection, Division of Biometry, Central Library and Publications, and Division of Agricultural Economics. It employs 126 researchers, 84 technical and administrative staff, and about 300 field workers.



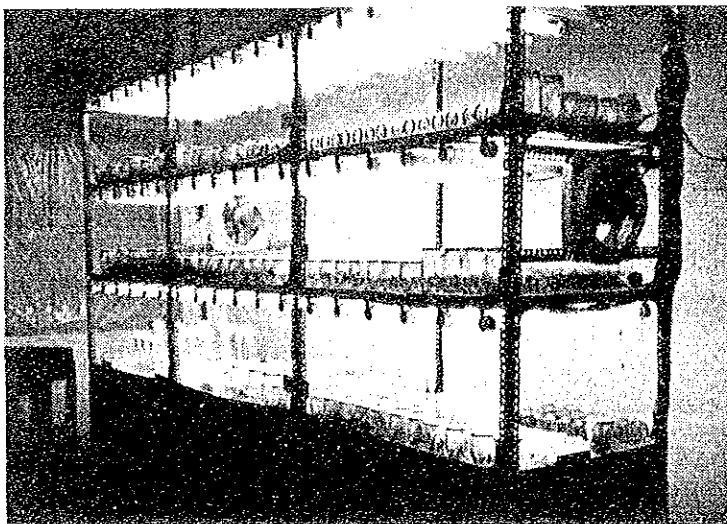
Whole View of C.A.R.I.



Laboratory - 1



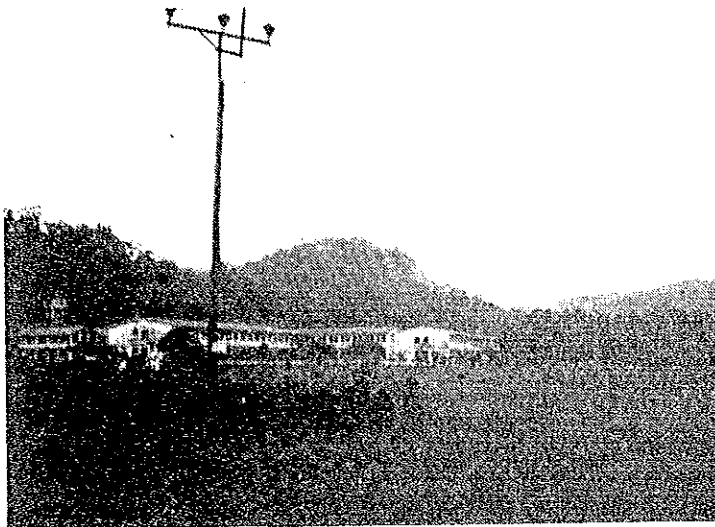
Laboratory - 2



Laboratory for propagation and preservation of vegetatively propagated plants
Preservation by tissue culture for vegetatively propagated plants and perennial crops



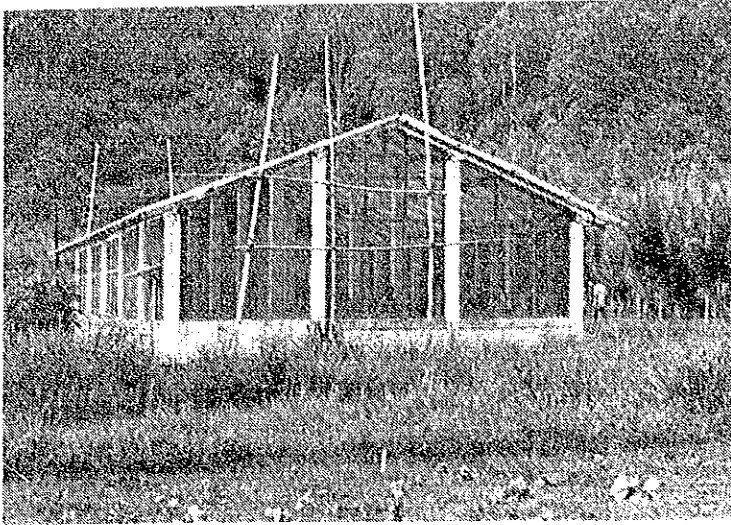
Researcher's room



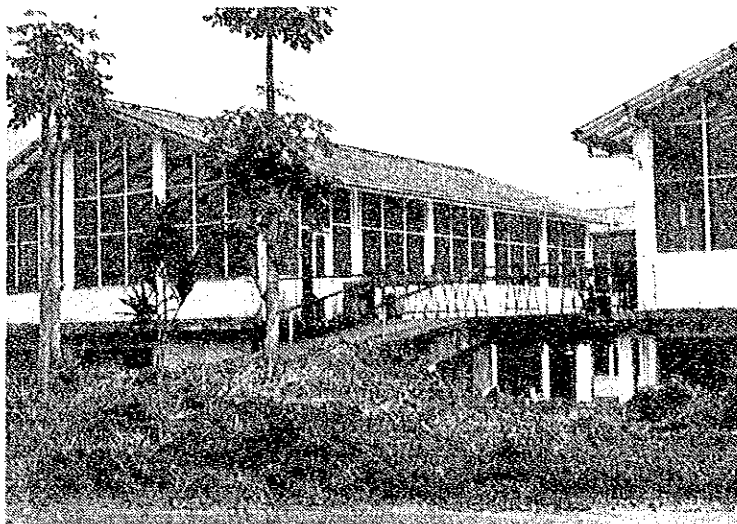
Experimental field - 1



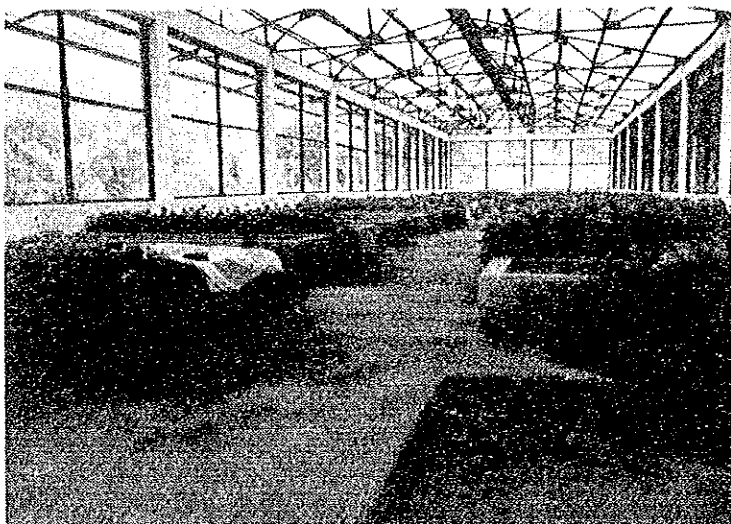
Experimental field - 2



Outside view of screen house - 1



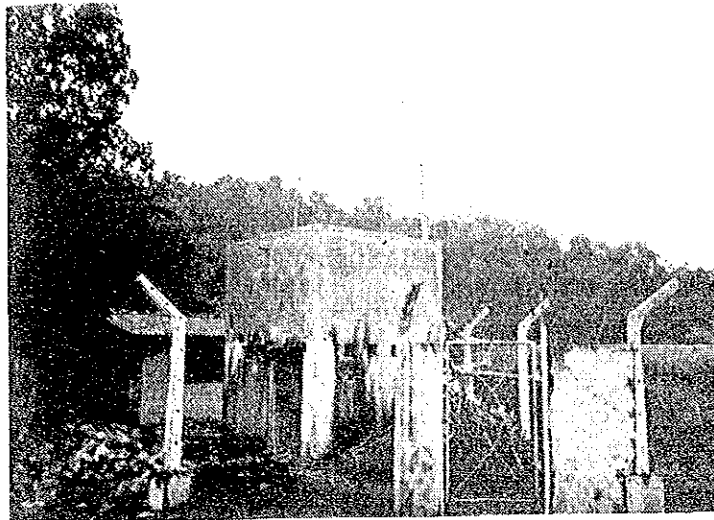
Outside view of screen house - 2



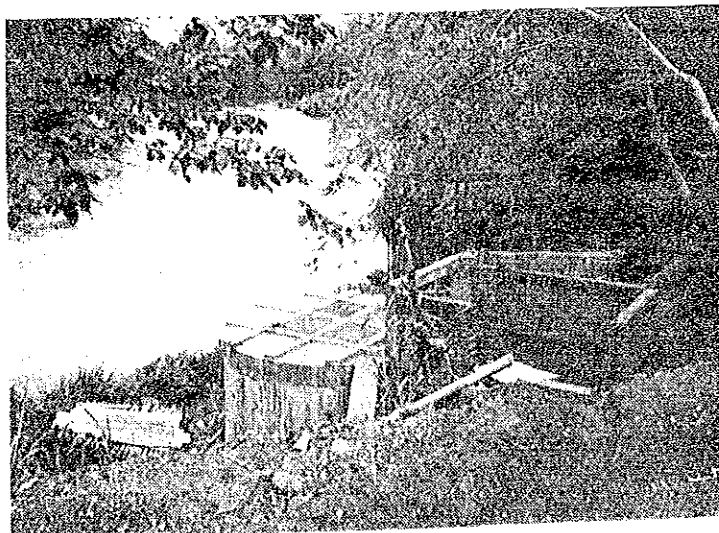
Inside view of screen house



Meteorological survey facilities



Reservoir tank for
experimental field
Pumping up from the well beside
the Mahaweli river, and distribute
to the experimental field



Construction of the well for
supplying water to the experimental
field (diameter is 20ft.)
Water level is same as
Mahaweli river