III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III, through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Equipment will become the property of the Government of the Republic of Indonesia upon being delivered C.I.F. to the Indonesia authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese with the experts referred to in Annex II.

IV. TRAINING OF INDONESIAN PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Indonesian personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Government of the Republic of Indonesia will take necessary measures to ensure that the knowledge and experience acquired by the Indonesian personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V. SERVICES OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take necessary measures to secure at its own expense the service of suitably qualified Indonesian counterparts and administrative personnel as listed in Annex IV.

VI. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take necessary measures to provide at its own expense:

   (1) Land, buildings and facilities as listed in Annex V;

   (2) Supply or replacement of machinery, equipment, instrument, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;

   (3) Transportation facilities and travel allowance for the official travel of the Japanese experts within the Republic of Indonesia;

   (4) Suitably furnished accommodations for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia will take necessary measures to meet:

   (1) Expenses necessary for the transportation of the Equipment within the Republic of Indonesia as well as for its installation, operation and maintenance thereof;

   (2) Customs duties, internal taxes and any other charges imposed on the Equipment in the Republic of Indonesia;

   (3) All running expenses necessary for the implementation of the Project.

VII. ADMINISTRATION OF THE PROJECT

1. The Director General of Reforestation and Land Rehabilitation (herein after referred to as "D.G.RLR."), Ministry of Forestry will bear overall responsibility for the implementation of the Project.

2. The Director of Reforestation and Afforestation, D.G.RLR., Ministry of Forestry, as the Project Director, will be responsible for the administrative and managerial matters of the Project.

3. The Manager of the Project will be responsible for the activities of the Project.

4. The Japanese Team Leader will provide necessary recommendations and advice on technical and administrative matters concerning the implementation of the Project to the Project Director and the Project Manager.

5. The Japanese experts will give necessary technical guidance and advice to the Indonesian counterpart personnel on matters pertaining to the implementation of the Project.

6. For the effective and successful implementation of the Project, a Joint Steering Committee will be established with the function and composition as referred to in Annex VI.

VIII. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Indonesia undertakes to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Indonesia except for those arising from the willful misconduct or gross negligence of the Japanese experts.

IX. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

X. JOINT EVALUATION

In order to review and evaluate the Project, both Governments will conduct the Joint Evaluation through JICA

and the Republic of Indonesia authorities concerned at the end of the cooperation term.

XI. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from June 1, 1992.

ANNEX

I. MASTER PLAN

1. Objective of the Project

In order to actively and steadily promote the Industrial Forest Plantation, Forest Rehabilitation and Regreening Programmes set by the Indonesian Government, the Project shall contribute to the implementation of Indonesian tree improvements through the development of the technologies of seed sources establishment, seed sources evaluation and seed production related to genetically superior seeds and seedlings of major tree species used for Industrial Forest Plantation.

2. Activities of the Project

(1) To develop the technologies of seed sources development, seed sources establishment and seed sources evaluation
(2) To develop the technologies of plant propagation
(3) To formulate the dissemination system of superior seed sources
(4) To advise on programmes for tree improvement development formulated by the Indonesian side

II. JAPANESE EXPERTS

1. Team Leader

2. Experts in the fields of :

(1) Seed Source Establishment
(2) Seed Source Evaluation
(3) Plant Propagation

3. Coordinator

4. Short-term experts

Short-term experts will be dispatched when the necessity arises, for the smooth implementation of the Project.

III. LIST OF MACHINERY AND EQUIPMENT

1. Machinery, equipment, instruments, tool and other materials for :

   (1) Seed Source Development
   (2) Seed Source Establishment
   (3) Seed Source Evaluation
   (4) Development of Propagation Technology
   (5) Nursery Establishment

2. Vehicles

3. Literature and Bibliograph of Tree Breeding

IV. LIST OF INDONESIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Project Director

2. Counterpart personnel in the fields of:

   (1) Project Management
   (2) Seed Source Establishment
   (3) Seed Source Evaluation
   (4) Plant Propagation

3. Administrative personnel

   (1) Clerical and service employees
   (2) Drivers and laborers
   (3) Other necessary supporting staff

V. LIST OF LAND, BUILDINGS AND FACILITIES

1. Land for

   (1) Project Office and related facilities
   (2) Seed Orchard, Scion Garden and Clone Bank
   (3) Field Experimental Sites of Progeny Tests for Seed Source Establishment

2. Buildings and facilities for

(1) Project Office
(2) Experts rooms
(3) Laboratory
(4) Administrative room
(5) Others

VI. THE JOINT STEERING COMMITTEE

1. Functions

The Joint Steering Committee will meet at least once a year and whenever necessity arises, and work:

(1) To approve the Annual Work Plan to be formulated by the Project in accordance with the Record of Discussions;
(2) To review the overall progress of the technical cooperation programme and the activities carried out under the above-mentioned Annual Work Plan in particular; and
(3) To review and exchange views on major issues arising from or in connection with the technical cooperation programme.

2. Composition

(1) Chairman: Director General of Reforestation and Land Rehabilitation, Ministry of Forestry
(2) Indonesian side:
    1) Project Director; Director of Reforestation and Afforestation, D.G.RLR., Ministry of Forestry
    2) Director of Agency for Forestry Research and Development, Ministry of Forestry
    3) Director of Planning Bureau, Secretariate General, Ministry of Forestry
    4) Director of Industrial Forest Plantation, D.G.RLR., Ministry of Forestry
    5) Head of Yogyakarta Provincial Forestry Office
    6) Representative of Gadjah Mada University (UGM)
    7) Representative of Bogor Agricultural Institute(IPB)

8) Representative of the National Planning and Development Board (BAPPENAS)
9) The other persons appointed by the Chairman

(3) Japanese side:
1) Team Leader
2) Experts appointed by the Team Leader
3) Coordinator
4) Resident Representative of the Indonesia Office, JICA
5) Personnel concerned to be dispatched by JICA, if necessary

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

MINUTES OF MEETING ON THE RECORD OF DISCUSSIONS
FOR
THE FOREST TREE IMPROVEMENT PROJECT
IN THE REPUBLIC OF INDONESIA

The Japanese Implementation Survey Team (hereinafter referred to as "The Team") and the authoritiee concerned of the Government of the Republic of Indonesia mutually agreed and signed the Record of Discussions on the technical cooperation for the Forest Tree Improvement Project in the Republic of Indonesia on February 21, 1992.

With regard to the above mentioned Record of Discussions, both sides agreed to take measures in the document attached hereto in order to implement the Project activities smoothly.

Jakarta, the Republic of Indonesia
February 21, 1992
No.210/V-RP/92

Hisashi Watanabe
Leader,
Implementation Survey Team
Japan International
Cooperation Agency

Armana Darsidi
Director General of
Reforestation and Land
Rehabilitation
Ministry of Forestry

THE ATTACHED DOCUMENT

1. The Indonesian side understood and will take necessary administrative measures in accordance with the Tentative Project Design of the technical cooperation proposed by the Implementation Survey Team of JICA, mentioned on Annex I, II and III.

2. The Indonesian side requested strongly that the Japanese Consultant Team should be dispatched as soon as possible after the commence of the Project in order to formulate Tentative Schedule of Implementation of the Project.

3. The Indonesian side will provide at its own expense mentioned in the Record of Discussions for the establishment of the seed sources and trials.

4. The Indonesian side will provide means of transportation at least two vehicles to Japanese experts until the arrival of vehicles for the Project from Japan.

5. The Implementation Survey Team strongly requested that the Project Manager who is responsible for the Project activities should be a member of the Joint Steering Committee.

TENTAIVE PROJECT DESIGN MATRIX OF A TECHNICAL COOPERATION
ON FOREST TREE IMPROVEMENT BETWEEN INDONESIA AND JAPAN

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTION
Goal;			
Successful execution of forest-plantation programs.	Achievement of reforestation. Successful rate of planting.	Records kept by Ministry of Forestry (RRL).	Continuous demands of wood by industries. Suitable allocations of wood industries.
Purpose;			
To establish a production and procurement system of genetically improved seeds and seedlings.	Amount of improved seedlings supplied for reforestation. Superiority of improved seedlings in productivity.	Sampling survey of executors of reforestation. Results of seed-source trials.	Enough funds for reforestations. Proper choice of species and utilization.
Outputs;			
Seed sources establishment.	Seed orchad (seedlings,Clonal).	Number of seed-sources established.	Administrative support for the enforcements of tree-improvement programs by R.R.L
Development of techniques on seed production and vegetation-propagation.	Possibility of implementation.	Technical reports published by the Center.	A full commitment by executors of reforestation.
Dissemination system of materials and seed source information.	Materials and information supplied.	Number of publications, materials and meetings by the Center.	
Project activities;	Japan;	Indonesia;	An authorization about roles of the Center for the promotion of tree improvement programs by R.R.L.
To conduct seed-sources establishment strarting from seed exploration and their assessments.	Dispatch of experts. Training of counterparts. Provision of equipments.	Provision of land for the Center and trials. Provision of building.	
To develop the techniques of seed-production and vegetative-propagation.	Allocation of funds for a part of project activities.	Recruitment of center staff. Allocation budget for the project activities.	Cooperation with universities and research institutes in formulation of tree improvement programs.
To construct a dissemination system of materials and information of genetically superior resources.			
To give advices for program execution.			

ANNEX II

Recommendation on the administrative support of R.R.L. for the execution of technical cooperation of Forest Tree Improvement Project

1. General objectives

R.R.L. will support the technical cooperation of forest tree improvement project by taking the following administrative measures.

1.1. To give the Center authority to coordinate various works on tree improvement with the executors of forest-plantation programs.

1.2. To take necessary administrative measures for the promotion of national tree improvement program.

2. Background of recommendations

2.1. Genetic gain will become large with the increase in population size (number of plus-tree), and with the increase in number of trials.

2.2. Genetic gain will be realized more quickly, if seed-sources are established in cooperation with the executors of forest-plantation programe.

3. Administrative measures to be taken by R.R.L.

Contents of administrative measures taken by R.R.L. are composed of the following two parts, which are corresponding to 1.1. and 2.2.

3.1. Authorization of roles of the Center in the execution of forest tree improvement, and it is better to be stated clearly as a written documents. With regards to the contents of the documentation, the following previleges and obligations would be considered.

Organization	Obligation	Previlege
Center	Supply of materials Technical extension	Retention of materials
Executor of forest plantation	Provision of land & labor Execution of measurements	Retention of seed sources Benefit from seed production
Universities, R & D agencies	Information & technical advice	Utilization of materials & data for research purposes

3.2. To hold annual meeting of the Coordination Committee. Annual work plan will be approved at this meeting. Topics discussed here would be the plans which are prepared by the working group meeting held by the Center.

4. Schedule for the implementation during the project period.

A cooperation with other organization to promote forest tree improvement will be achieved through the following three steps:

4.1. Cooperation with Forest Regional Office or State companies.
In the first two years, the Center will establish seed sources for demonstration plot in the state forest near the Center site.

4.2. Cooperation with major Private Companies involved in H.T.I.
In the latter half of the project period, the Center will start to establish seed-sources by supplying high quality seed, design and technical guidance, to the major private companies having reliable seedling production system.

4.3. To make a contract on the cooperation with other National and/or International organizations.
At the end of the project, R.R.L. will compile a standard procedures for the Center to cooperate with related organization for the execution of forest tree improvement.

ANNEX III

AN IDEA ON THE PROGRAMME OF TREE IMPROVEMENT PROJECT
WITH RELATED ORGANIZATIONS

ITEM	UNIVERSITY, RESEARCH INS.		CENTER (RLR,M.F.)		COMPANY, DISTRICT OFFICE
Seed collection					
- Planning	Provide information	--->	Compilation	<---	Advice
- Selection	Advice of experts	--->	Technical guidance	--->	Selection
- Collection			Implementation	<---	Supply labour
- Storage	Research uses	<---	Storage		
Seeds source establishment					
- Planning	Provide information	--->	Compilation	<---	Application
- Establishment	Advice of experts	--->	Material supply and advice	--->	Establishment
- Record	Research uses	<---	Recording of document	<---	Reporting
Seed source evaluation					
- Planning	Advice	--->	Compilation		
- Survey	Support and advice	--->	Technical guidance (Implementation)	--->	Measurement
- Evaluation	Research uses	<---	Recording of data analysis	<---	Reporting
				--->	Application
Seed production					
- Maintenance			Technical guidance	--->	Management
- Production			Technical guidance	--->	Self-use and sale
- Record	Research uses	<---	Recording of data	<---	Reporting

5　暫定実施計画（ＴＳＩ）〔Ｒ／Ｄ締結時（1992年２月21日）〕

TENTATIVE PROJECT DESIGN MATRIX OF A TECHNICAL COOPERATION ON FOREST TREE IMPROVEMENT BETWEEN INDONESIA AND JAPAN

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTION
Goal; Successful execution of forest-plantation programs.	Achievement of reforestation. Successful rate of planting.	Records kept by Ministry of Forestry (BRL).	Continuous demands of wood by industries. Suitable allocations of wood industries.
Purpose; To establish a production and procurement system of genetically improved seeds and seedlings.	Amount of improved seedlings supplied for reforestation. Superiority of improved seedlings in productivity.	Sampling survey of executors of reforestation. Results of seed-source trials.	Enough funds for reforestations. Proper choice of species and utilization.
Outputs; Seed sources establishment. Development of techniques on seed production and vegetation-propagation. Dissemination system of materials and seed source information.	Seed orchad (seedlings,Clonal). Possibility of implementation. Materials and information supplied.	Number of seed-sources established. Technical reports published by the Center. Number of publications, materials and meetings by the Center.	Administrative support for the enforcements of tree-improvement programs by R.I.L A full consitment by executors of reforestation.
Project activities; To conduct seed-sources establishment starting from seed exploration and their assessments. To develop the techniques of seed-production and vegetative-propagation. To construct a dissemination system of materials and information of genetically superior resources. To give advices for program execution.	Japan; Dispatch of experts. Training of counterparts. Provision of equipments. Allocation of funds for a part of project activities.	Indonesia; Provision of land for the Center and trials. Provision of building. Recruitment of center staff. Allocation budget for the project activities.	An authorization about roles of the Center for the promotion of tree improvement programs by R.I.L. Cooperation with universities and research institutes in formulation of tree improvement programs.

5 （続き） 計画打合せ調査時に修正されたＰＤＭ（1992年10月21日）

TENTATIVE PROJECT DESIGN MATRIX OF TECHNICAL COOPERATION ON FOREST TREE IMPROVEMENT BETWEEN INDONESIA AND JAPAN

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTION
Goal :			
Succesful execution of forest plantation prograns.	Achievement of reforestation. Succesful rate of planting.	Records kept by Ministry of forestry (RLR).	Continuous demands of wood by industries. Suitable allocations
Purpose :			
To establish a production and procurement system of genetically improved seeds and seedlings.	Amount of improved seedlings supplied for reforestation. Superiority of improved seedling in productivity.	Sampling survey of executors reforestation. Results of seed-source trials.	Enough funds for reforestations. Proper choice of species and utilization.
Outputs :			
I. Seed sources establishment II. Developed plant propagation techniques. III. Dissemination of materials and information. IV. Advice to promote tree improvement activities.	Seed orchard (seedling, clonal). Possibility of implementation. Materials and information supplied.	Number of seed-source established. Technical reports published by the Center. Number of publications, materials and meeting by the Center.	Administrative support for the enforcements of tree improvement programs by RLR. A full commitment by executors of reforestation.
Project activities :	Japan :	Indonesia :	
I-1 Seed procurement -2 Establishment of seed sources -3 Evaluation of seed sources	Dispatch of experts. Training of Counterpats. Provision of equipments.	Provision of land for the Center and trials. Provision of building.	An authorization about roles of the Center for the promotion of tree improvement programs by RLR.
II-1 Vegetative propagation techniques -2 Seed production techniques	Allocation of funds for a part of project activities.	Recruitment of center staff. Allocation budget for the project activities.	Cooperation with universities and research institutes in formulation of tree improvement programs.
III-1 Information management -2 Information services -3 Material and technical support			
IV-1 Advice for the execution of tree improvement progran			

6　質問票および回答

長期専門家への個別質問票および回答

（回答者４名）

Evaluation Mission on the Forest Tree Improvement Project

Questionnaire to the Japanese Experts of the Forest Tree Improvement Research and Development Institute

1. What is your evaluation on the overall performance of the total project? Please mark one of the following five statements which suit your opinion at best and write the reasons that support your answer.

Overall performance of the total project is :

[ ] very good　*(1人)*　[ ] good　*(3人)*

[ ] moderate　[ ] not good　[ ] poor

Reasons :

- *プロジェクトの成果は一定の水準に達したものの、それらを有効に活用して育種システムを確立する取り組みは、C／P機関が変わったこともあり、不十分だった。*
- *インドネシアに精通している専門家のおかげで臨機応変かつ最適な対応が可能であった。*
- *生活面での問題がない地域であり、業務に集中できた。*
- *カウンターパートの質が高かった。*
- *電気、水道、電話などのインフラが不十分で効率的な活動を疎外する面があった。*

For the following questions, please answer only for the part of project of which you are in charge.

2. What is your evaluation on the overall performance of the project of your part? Please mark one of the following five statements which suit your opinion best and write the reasons which support your answer.

Performance of the project of my part is :

[ ] very good　*(1人)*　[ ] good　*(2人)*

[ ] moderate　*(1人)*　[ ] not good [ ] poor

Reasons :

3. What is your evaluation on the efficiency of dispatching short-term experts?

[ ] very good　*(1人)*　[ ] good　*(1人)*

[ ] moderate　*(3人)*　[ ] not good [ ] poor

How effective they were? Were there any problems with them?

- *十分な技術的指導が得られた。（2人、種子源開発分野）*
- *派遣時期が適当でないケースがあった。（2人）*
- *機材の到着が遅れたことにより短期専門家の活動効率が低下した。（DNA技術）*

・課題の設定、分析の方向が不適切な場合があった。（種子源評価）

4. Do you think type, quantity, quality and timing of provided equipment were good?

[ ] very good （1人） [ ] good （1人）

[ ] moderate （1人） [ ] not good （1人） [ ] poor

How effective they were? Were there any problems with them?

・ほぼ十分な機材が供与された。（3人）

・ＰＣ付属装置が不足した。

・スペアパーツの調達が容易な機種の選定が望まれる。

5. Do you think scope, number, period, and timing of counterpart training in Japan were good?

[ ] very good [ ] good（3人） [ ] moderate （1人）

[ ] not good [ ] poor

How was the level of understanding by the counterparts who received the training?

[ ] very good [ ] good（3人） [ ] moderate （1人）

[ ] not good [ ] poor

How effective they were? Were there any problems with them?

・技術向上に役立った。

・日本理解を深めることで、専門家との共同作業がスムースに行われるようになった。

6. What is your evaluation on your counterpart researchers in terms of the followings?

- number [ ] very good [ ] good（3人） [ ] moderate
  [ ] not good（1人） [ ] poor
- capability [ ] very good（1人） [ ] good（3人） [ ] moderate
  [ ] not good [ ] poor
- work attitude [ ] very good [ ] good（4人） [ ] moderate
  [ ] not good [ ] poor

Are there any problems related to the counterpart researchers?

・一部C／Pの能力、取組は素晴らしく、能力向上は目覚ましい。

・従来のインドネシア・スタイルが定着したC／Pには、取り組みの態度が改善しなかったものもいた。

・C／Pが多数のため、専門家は優秀なC／Pに集中して技術移転を行ってきたが、研究所ではなるべく平等に扱おうとしたため、出張の際に専門家の希望するC／Pが指名されないケースがあった。

7. What is your evaluation on the technology transfer to your counterpart researchers?

[ ] very good [ ] good（3人） [ ] moderate [ ] not good [ ] poor

Do you think they can continue R&D activities after the project by themselves?

[ ] yes (2人)　　[ ] no (1人)

If not, what are the problems?

- プロジェクトが終了した場合、予算や組織体制が不十分なため、活動レベルが低下すると思われる。
- 栄養繁殖分野では今後も指導が必要である。

8. Do you think human resources, facilities, and financial resources of the Institute are enough to continue the R&D activities after the project? [ ] yes (1人)　　[ ] no (3人)

If not, what are the problems?

- イ側予算の執行が送れるため、機材の維持管理、出張旅費の支給に支障をきたすことが多い。(3人)
- 機材の維持管理に責任を持つスタッフがいない。

9. Was the implementation of the project efficient enough in overall? Did you experience any management problems of the project? What are they and how they could be solved?

- 栄養繁殖分野では、テクニシャンが十分な人数配置されていない。
- カウンターパート機関が研究開発庁に移ったことにより、造林企業協会や大学との連携が不十分であった。

10. Please make any other comments on the performance of the project.

- 活動の効率を確保するためには、研究所のインフラ（特に水道）の改善が重要である。
- C／Pの計画性のない異動がプロジェクトの効率を低下させている。

11. What is your view for the post-project period? Please describe freely.

- 研究開発の継続と研究成果の普及のためにはプロジェクトの継続が必要である。
- 研究所の予算執行を適切なものとすることが重要である。

カウンターパートへの個別質問票および回答

(回答者１９名)

Evaluation Mission on the Forest Tree Improvement Project

Questionnaire to Local Counterparts of the Forest Tree Improvement Research and Development Institute

1. What is your evaluation on the overall performance of the total project? Please mark one of the following five statements which suit your opinion at best and write the reasons that support your answer.

Overall performance of the total project is :

[ ] very good　4人
[ ] good　13人
[ ] moderate
[ ] not good
[ ] poor　(無回答　2人)

Reasons :
カウンターパートは経験と技術移転を得ることが出来たから。(3人)
プロジェクトは造林企業のニーズに応えたから。(2人)
実施と技術移転のフォーマンスがよかったから。(1人)
供与された機材が役に立ったから。(1人)
当初の目標を達成したから。(1人)
造林企業が熱心に協力したから。(1人)

2. What is your evaluation on the overall performance of project of your part? Please mark one of the following five statements which suit your opinion at best and write the reasons that support your answer. .

Overall performance of the total project is :

[ ] very good　5人
[ ] good　11人
[ ] moderate　1人
[ ] not good
[ ] poor　(無回答2人)

Reasons:
専門分野での経験と技術移転を得ることが出来たから。(3人)
供与された機材が役に立った。(3人)
採種林の造成は成功したから。ただし南カリマンタンでは風害に対する配慮が必要。(1人)
専門家とカウンターパート間の協力に改善の余地がある。(1人)
Reproductivebiology分野の研究は専用ラボがないので効率が悪かった。(1人)
専門家の指導を密度の濃いものにして欲しい。(1人)
一部機材が不足している。(1人)

3. What is your impression on the Japanese experts (log-term / short-term experts)? Please write freely.

ほとんどの専門家は良かった。（１３人）
専門家は非常に良く、専門知識も十分だった。（４人）
専門家は熱心だった。（２人）
短期専門家の滞在が短すぎた。（１人）

4. Was the cooperation with Japanese experts performed well?

[ ] very well　８人
[ ] well　９人
[ ] moderate　１人
[ ] not very well
[ ] not well　（無回答１人）

Did you have any difficulties in cooperation with them? What are they?
特に問題なし。（１６人）
コミュニケーションの問題が少しあった。（２人）
研究計画と分析面で非常に助けられた。（１人）
協力に問題はなかったが、仕事が多く、時間管理が難しかった。（１人）
専門家が複数分野を担当しているので、C／Pとの調整に問題があった。（１人）

5. Do you think type, quantity, quality and timing of provided equipment were good?

[ ] very good　３人
[ ] good　１０人
[ ] moderate　４人
[ ] not good
[ ] poor　（無回答２人）

How effective they were? Were there any problems with them?
良かった。（６人）
供与された機材は非常に有用だが、スペア・パーツを日本に注文する必要がある。（５人）
特に問題なし。（３人）
ミスト温室の水質が悪かった。（２人）
機材の到着が遅れた。（２人）
マニュアルの多くは日本語だった。（２人）

6. Do you think scope, number, period, and timing of counterpart training in Japan were good?

[ ] very good　４人
[ ] good　４人
[ ] moderate　３人
[ ] not good
[ ] poor　（無回答９人：未研修者を含む）

How was the level of your understanding of the training?

[ ] very good　　4人
[ ] good　　6人
[ ] moderate
[ ] not good
[ ] poor　　(無回答9人：未研修者を含む)

How effective they were? Were there any problems?

コミュニケーションの問題があった。(2人)
研修期間が短かかった。(2人)
自分の専門分野に必ずしも一致していなかった。(2人)
樹種が違ったのでインドネシアでは役に立たない。(1人)
非常に有効であった。(1人)
日本語の教材を翻訳してくれなかった。(1人)

7. How do you want to develop your carrier based on the experience through the project?

[ ] I want to continue research staying at the Institute.　19人
[ ] I want to have another experiences not only at the Institute but also in another area / institutions.　1人 (重複回答)
[ ] others (please describe hereafter)

8. Please make any other comments on the performance of the project.

研究成果の交換と問題解決のために専門家との定期的な議論がもっと必要。(3人)
月例会議が不定期に行われた。(2人)
セミナーはもっと頻繁に開かれるはずだった。(1人)

9. What is your view for the post-project period? Please describe freely.

5年は短すぎる。継続すべきである。(9人)
造林企業とのネットワークをうまく作ることが課題である。(4人)
造林企業は今後も研究所の活動に協力的であろう。(3にん)
今後の予算が心配。(2人)
総合的な研究プログラムが必要。(1人)

協力造林企業への質問票および回答

(回答2社：INFUTANI III、PT. Perawang Sukses Perkasa Industri)

Evaluation Mission on the Forest Tree Improvement Project

Questionnaire to Related HTI Companies

1. What is your evaluation on the overall performance of the total project? Please mark one of the following five statements which suit your opinion at best and write the reasons that support your answer.

   Overall performance of the project is :
   [ ] very good *(1社)* [ ] good *(1社)* [ ] moderate [ ] not good [ ] poor

   Reasons :
   - *プロジェクトはスケジュール通りに実施された。(2社)*
   - *研究所のスタッフは非常に優秀で、効率良く技術移転を受けることができた。*

2. What kind of resources did you offer for seed source development by the project? (land, facilities, labor, etc.)
   - *土地、施設、労働力を提供した。(具体的な数量は不明)*

3. Do you think necessary techniques for seed source establishment, evaluation, and roguing have been transferred satisfactory? If not, what kind of techniques need further transfer?
   - *採種林の造成は完了したが、間伐については今後も技術指導が必要。*
   - *第2世代の育種のための技術移転が必要。*
   - *コンピューターによる評価データ管理のより詳細な技術移転を希望する。*

4. What benefit did you (or will you) receive from the project, and as a result what changes in their operations were (or will be) made?
   - *技術とノウハウの移転、企業の人材育成、造成された採種林が便益である。*
   - *改良種苗をオーストラリアから輸入する必要がなくなる。これまでは4樹種について高額な種子を輸入していた。(INFUTANI III)*
   - *今後は他の地域でも育種を試行し、全て改良種苗で造林したい。また、改良種苗を扱うビジネスを検討したい。(INFUTANI III)*

5. What kind of tree improvement material and related information were you provided by the FTIRDI? Were you satisfied with them? If not, what are the major reasons?
   - *提供された情報と材料は十分満足できるものであった。*

6. Did the cooperation with the FTIRDI performed well? If not, what are the problems?

- 共同作業は順調に実施された。
- 今後も研究所のセミナーに参加したい。

7. Were there any significant influences to the project by the change in institutional setup of the FTIRDI at the middle of the project period? What were they?

- 研究所の組織変更による影響はほとんどなかった。

8. Was the implementation of the project efficient enough in overall? Did you experience any management problems of the project? What are they and how they could be solved?

- 実施は十分効率的であった。
- プロジェクト実施上の問題は特になかった。

9. Please make any other comments on the performance of the project.

10. What is your view on the FTIRDI's activities in the post-project period? Please describe freely.

- 研究所との協力により育種の技術移転を受けることができて非常に満足している。
- 第1世代の育種が完了するまで協力の継続を希望する。
- 今のところ早生樹種の育種で満足しているが、将来はフタバガキ科の育種に挑戦したい。

7 研究成果一覧

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8　インドネシア林木育種計画フェーズII要請内容要約

1．プロジェクト目標

（1）産業及びアグロフォレストリーに必要かつ遺伝的に優れた郷土樹種及び外来樹種の生産量と供給量を増大させる。

（2）国家的ネットワークの確立を通して造林事業会社を対象に改良林木の普及を行う。

（3）インドネシアの研究者の研究能力を強化する。

2．プロジェクト活動

大きく次の4分野に分けられる。

（1）育種ネットワークの拡大

（2）第二世代育種の推進

（3）育種対象樹種の拡大

（4）研究能力の向上

3．担当省庁、実施機関

担当省庁は林業省林業研究開発庁、実施機関はジョグジャカルタの林木育種研究所。

4．主な投入

＜日本側負担分＞

長期専門家：チームリーダー／林木育種
　　量的遺伝学
　　情報システム
　　調整員

短期専門家：分子遺伝学
　　生殖生物学

カウンターパート研修

機材供与：

フェーズIで供与された機材を補完するもので、大規模なものは予定していないが、次のものは要望したい。

1）情報システム分野機材（データ分析用コンピューターハードウェア・ソフトウェア、事務機器・備品、視聴覚機材）

2）実験室用機材（分子遺伝学、生殖生物学、生殖質収集用機材）

＜インドネシア側負担分＞

現行プロジェクトの施設・機材

林木育種研究所のスタッフ

試験林設定・測定・評価と事務室使用に必要な経費

5．協力期間

１９９７年から5年間

9　インドネシア林木育種計画フェーズII要請書

INDONESIA-JAPAN
FOREST TREE IMPROVEMENT PROJECT

A PROJECT PROPOSAL

MINISTRY OF FOREST
FORESTRY RSEARCH AND DEVELOPMENT AGENCY

September 1996

BACKGROUND AND JUSTIFICATION OF THE PROPOSED PROJECT

Forest Resources

Indonesia's natural forests are a resources of genetic resources of plat species and wildlives which play a vital role in maintaining the balance of nature. Its impact to the global environment is very significant.

The total forest area of 109 million ha (144 million ha recorded in 1980) of natural forests are the world's mostbiologically divers and represent 10 % of the world's dwindling tropical rainforest. They are vital for Indonesia's economic development providing tropical rainforest. They are vital for Indonesia's economic development providing most of the domestic wood demands and some US $ 3.0 billions in exports earning. Despite the importance of these forest for maintaining global biodiversity as well as economic development for Indonesia, natural forests have been under pressure for may years. According to FAO estimates average annual deforestation in Indonesia during the period 1982-1990 amounted to 1.315 million ha.

As demand for wood both domestically as well as internationally continues to grow, the Government of Indonesia has embarked on a massive afforestation and reforestation program aiming at preserving the natural forests while maintaining the supply of woods. The program which began in 1980's comprising of industrial plantations with prime objective of providing wood for fores-based industry, reforestation of reserves and catchment areas, and social and community forestry.

The targets for current 5-year plan (Pelita VI) encompass the establishment of 1.25 million ha of industrial plantations (HTI), 1.0 million ha of reforestation and rehabilitation, 0.5 million ha of community/social forest, and 3.6 million ha of reforestation of natural forests (including rehabilitation of degraded forests). These afforestation and reforestation program requires concerted efforts to address some of the key elements for program to be a success.

Government Policy

The Government of Indonesia has taken a number of actions to address the problems of deforestation and forest degradation including the formulation of an Indonesia Forestry Action Program (IFAP). The policy set up in the IFAP was driven by three policy imperatives : i). to protect ecosystems, soil and water; ii). to sustain multiple goods and services provided by forest and to benefit present and future generations; and iii). to ensure the proper consideration of views and expertise of all people affected and involved in forest-related activities.

Indonesia Forestry Action Program is divided into 9 sub-programs, namely :

1. Institution and Human Resources Development
2. Forest Resources Inventory and Land-Use Planning
3. Improvement of Forest Lands Productivity and Establisment of Industrial Timber Plantation
4. Improvement of Efficiency of Forest-based Industry
5. Conservation of Living Natural Resources and Their Ecosystems
6. Improvement of Natural Production Forest
7. promotion of People's Participation
8. Soil and Water Conservation, and
9. Forest Protection.

With the view of ensuring the success of the implementation of sub-program 3, Ministry of Forestry has identified the supply of genetically improved plant materials as a top priority. Production of genetically superior seeds can only be obtained through implementation of a comprehensive genetic and breeding plans. The importance of the availability of genetically improved seeds is evidence from the establishment of an institution as called Forest Tree Improvement Research and Development Institution Institute in Yogyakarta. As the only research institution in the field of tree breeding and genetic improvement in the country, the Institute is expected to play a vital role in producing genetically superior trees and in promoting tree improvement works through out Indonesia.

Indonesia-Japan Forest Tree Improvement Project

Recognizing the limited resources to undertake a long term activity such as tree breeding and genetic improvement, the Government of Indonesia has requsted the Government of Japan for assistance. This request has subsequently granted with a grant-aid program to establish facilities necessary to implement tree breeding and genetic improvement work. The grant-aid program which was for two years from 1990-1992 was the followed by a project type technical cooperation. This project is called Indonesia-Japan Forest Tree Improvement project.

Initially, implementation of the project was carried out between Directorate General of reforestation and Land Rehabilitation and japan International Cooperation Agency (JICA). However, as the plantation program was expanding and demands for genetically improved seeds became prominent, this adhoc arrangement is no longer affective. A new institution under the Forestry Research and Development Agency was then founded in 1994 to carry out tree breeding and genetic improvement program. The institution is called Forest Tree Improvement Research and Development Institute. Consequently, the implementation of the Indonesia-Japan Forest Tree Improvement Project was transferred to this Institute.

The objective of the e Indonesia-japan Forest Tree Improvement project is to support on going afforestation program (HTI) in Indonesia through the development of techniques of tree improvement and to enhance seed sources establishment by the HTI companies. Working program of Indonesia-Japan Forest Tree Improvement Project is set out in the Tentative Schedule Implementation which identifies 4 areas as the core activities of Indonesia-Japan Forest Tree Improvement Project, namely :

1. establishment of seed sources and subsequent evaluation.
2. to develop a dissemination system of materials and information of genetically superior resources
3. advise to promote tree improvement activities.

END-PROJECT ACHIEVEMENT OF THE INDONESIA-JAPAN FOREST TREE IMPROVEMENT PROJECT.

During the five years term of the technical cooperation (1992-1997) both the Indonesian counterparts and Japanese experts have put a dedicated work to ensure that the Indoensia_Japan Forest Tree Improvement Project is successful in implementing its programs.

Indonesia-Japan Forest Tree Improvement Project Phase 2-Proposal

The highlights of the Indonesia-Japan Forest Tree Improvement Project at the end of the project term are :

Improved Genetic Resources

One of the most invaluable assets resulting from the Indonesia-Japan Forest Tree Improvement Project is the availability of selected families of improved genetic established in a seed orchard/progeny test. A total of 33 orchards have been established in 6 Provinces i.e. Riau, South Sumatra, Central Java, South Kalimantan, West Kalimantan, East Kalimantan, comprising of the following species : i). *Acacia mangium*, ii). *Acacia auriculiformis*, iii). *Acacia crassicarpa*, iv). *Eucalyptus pellita*, v). *Eucalyptus urophylla*, vi). *Paraserianthes falcataria*.

Three species namely *A. mangium*, *E. pellita*, and *Europhylla* have undergone culling which removes inferior individuals/families from the population. These populations will serve as the genetic foundation for further breeding as well as base material for operational production of genetically superior seeds. It is expected that by 1998 first generation of genetically improved plat materials (seeds and vegetative materials) of those species will be available for operational use.

Promoting Tree Improvement Program

The Indonesia-Japan Forest Tree Improvement Project has set up a model of working arrangement with HTI companies in implementing the breeding and genetic improvement program. In this arrangement, seed orchard progeny trials were established in their concession areas. The Indonesia-Japan Forest Tree Improvement Project is responsible for providing genetic materials for trials, field design, assistance in nursery, planting, and measurement. Whilst, the HTI companies are looking after the cost of seedling production, site preparation, planting, tending, and measurement. In return, the company will have access to the data collected as well as plant materials from trials.

Such an arrangement is benefiting both the Indonesia-Japan Forest Tree Improvement Project and the HTI companies. It also help promotes the tree improvement work. A total of 4 HTI companies have been actively participating in the Indonesia-Japan Forest Tree Improvement Project's program of provenance/progeny testing. This working arrangement is seen as a model of collaborative work between research and field application in breeding and genetic improvement.

Established Facilities

One very important component of the Indonesia-Japan Forest Tree Improvement Project is the provision of equipments necessary to conduct research and development of tree improvement. Laboratory facilities for seed testing, tissue culture propagation, reproductive biology, wood characteristic and molecular genetics works are modern by any standard and directly applicable to help achieve the goal of producing genetically superiors seeds.

A prominent feature of this facility is the laboratory used for evaluation of genetic resources by means of molecular markers (DNA and isoenzyme markers). This laboratory is equipped with modern equipments to carry out research in genetic study using DNA techniques. The role of this advance biotechnology techniques to tree breeding and genetic improvement is to significant increase the effectiveness and efficiency of the breeding program thus increasing genetic gains.

The research facilities provided by JICA has strengthen the Institute 's capability to conduct research and development to support breeding and genetic improvement program in Indonesia.

foundation for achieving the goal of establishing highly productive plantations through the use of genetically superior plant materials. The strategy, technology, methodology, and approaches that have bee developed during the term of the project are relevant to the problems of plantation establishment as well as reforestation program in general. However, as a long term activity consisting of many a fraction of the potential genetic gains available. Therefore, development of breeding and genetic improvement program into an advance breeding plan is a necessity.

THE NEED FOR AN ADVANCE PROJECT

Despite all the successful achievement of the project, there remains some urgent matters which require further assistance from the Government of Japan. Such assistance is necessary in order to take the full benefit of the achievement of the project for the successful implementation of forestry development program. There are four major reason for an advance project. namely :

1. **Further development of breeding systems.**

   During the term of the project, genetic improvement of five major species of HTI, namely : *Acacia mangium, Acacia crassicarpa, Eucalyptus urophylia, E. pellita,* and *Paraserianthes falcataria* have been carried out. The genetic resources in the form of provenance/progeny testing are an extremely valuable asset which should be properly managed. This would require a continuation of the breeding, selection and testing cycle into an advance breeding plan. Significant increase in genetic gains is expected in every cycle. As those species remain the dominant species of the HTI plantations, the impact of highly productive plantations will be very significant an achieving the goal of HTI program in particular and the reforestation program in general.

2. **Breeding and genetic improvement for other priority species.**

   In addition to the five species dealt with the project there are still a number of species both local and exotic which has potential for industrial purposes as well as non-industrial use/agroforestry. The need for selecting a range of species is a logical consequences of diversity of environmental and growing conditions. Inappropriate selection of species not only results in failure of the plantations but more important may cause environmental damage.

3. **Extension of tree improvement work.**

   Nationally, there are more than 126 HTI companies (24 HTI for pulp and 102 HTI for timber) who are actively implementing plantations program. During the Phase I of the project, 4 HTI pulp companies have had a working agreement with the project to participate in tree improvement program. This working arrangement has prove itself to be a very effective way of introducing genetically improved seeds into operational plantation. Therefore, it deserves to be extended to more HTI companies.

4. **Strengthening research capability**

   The forest Tree Improvement Research and Development Institute is structured into 6 research groups. This grouping is designed to achieve a comprehensive research and development on tree improvement. As a newly established research institute, the academic capability of the scientists and reseach management skills of staff are needed to be improved.

THE PROPOSED PROJECT

Development objectives

The industrial plantation (HTI) program is the only feasible alternative to relieve the pressure on the declining of natural rain forests. The program also provides many benefits of forest plantations for industry, soil and water conservation, land rehabilitation, to meet the needs of local communities in forest products, employment and services.

As more than 70 % of the population are living in rural areas, forestry sector is expected to play a major role in the improvement of their welfare. This may be achieved by providing them with good quality seeds of multipurpose species.

The forest Tree Improvement Research and Development Institute is relatively a new organization. Despite its strategies role, the academic capability of the researchers are needed to be improved.

The project will be instrumental in achieving the goal of establishing a productive industrial plantation as stated in the sub-program 3 of the Indonesia Forestry Action Program through its contribution to the followings:

1). ensuring the availability of genetically improved seeds of HTI species to increase productivity of plantations.

2). ensuring the availability of improved seeds of multipurpose tree species to increase the welfare of rural people.

3). increase awareness and understanding of the importance of using genetically improved seeds.

4). strengthening of skills and research capabilities of Indonesian research workers, and improved institutional capabilities through transfer of skills and knowledge.

Project purpose

1. increase the production and provision of genetically superior plant materials of both indigenous and exotic species of high priority for industry and agroforestry.
2. extension of tree improvement work to HTI companies through establishing a national network.
3. strengthening of research capability of Indonesia research workers.

Indonesia-Japan Forest Tree Improvement Project Phase 2-Proposal

Project Activities

The activity of the project is built upon the achievement of the project, Phase I. The proposed project activities are summarized in the following table.

Achievement of Phase I (1992-1997)	Follow-up Actions
@ Breeding strategy of five major species developed. @ Breeding populations of five major species established @ Working arrangement with 4 HTI companies established. @ Improvement of research facilities, research and development capability.	@ Develop second generation breeding strategy for the five major species. @ Build the network of tree improvement involving more HTI companies, and promote practical use of tree improvement @ Develop breeding strategies for other species @ Improvement of research capability continues.

Breeding and Genetic Improvement

Objectives of this activity are :

1. to provide wide genetic base of high value tree species as a basis for breeding works as well as to meet the immediate demand of improved seeds for reforestation and agroforestry and agroforestry.

2. to establish broad-based genetic resources for ex-situ conservation of selected species.

3. to continue the selection, breeding and testing process of five major species adopted in Phase I of the Indonesia-Japan Forest Tree Improvement Project in order to further increase genetic gains.

4. to carry out control pollination of superior families which were selected during the Phase I.

5. to apply vegetative propagation techniques to increase genetic gains.

6. to develop molecular markers (DNA techniques) to assist the selection of superior families.

7. to transfer skills and knowledge of advance biotechnology techniques to Indonesian research workers.

Extension Program

Objective of this activity are :

1. to transfer skill and knowledge on the implementation of tree improvement program to HTI companies to convince them that the benefit of using genetically improved seeds is very significant.

2. to develop a network of tree improvement program among government and private sector in order to avoid unnecessary duplication of activities.

Institutional Framework

The recipient organization is the Ministry of Forestry. The executing organization of the project is Forestry Research and Development Agency. The project will be implemented by the Forest Tree Improvement Research and Development Institute in Yogyakarta.

Major Inputs

Expected Assistance from the Government of Japan

Major contribution for the project is expected from the Government of Japan in the form of :

A. Experts

The following long-term/short-term experts are envisaged :

Long-term experts

@ Team Leader/Tree Breeding Expert
@ Quantitative Genetics Expert
@ Information System Expert
@ Coordinator

Short-term Expert

@ Molecular Genetics Expert
@ Reproductive Biology Expert

B. Counterpart Training

C. Equipments

Provision of equipment is not a major component of the project. It will supplement the existing facilities procured during Phase I. Nevertheless, the following provisions of equipments are anticipated :

1. Information system

Computer hardware and software for data analysis
Office equipment and furniture
Audio and video facilities

2. Laboratory Equipment

   Molecular Genetics
   Reproductive Biology
   Germ plasm collection equipment

Expected Contribution from the Government of Indonesia

The Government of Indonesia is expected to provide the facilities available at the Forest Tree Improvement research and Development Institute in Yogyakarta for the project. All staff of the Institute will be actively participating in the project.

Cost associated with trials establishment, measurement/evaluation, and general office use are to be provided by the Government of Indonesia

Major Outcomes

Major outcomes of the project will be :

1. population of tree with high genetic quality will be available; they can be used both as sources for mass production of high quality seeds and for further breeding and genetic improvement.

2. technologies packages in genetic improvement, reproductive biology, molecular genetics, data base management, and information system will be available.

3. genetic information resulting from DNA analysis, such as gene diversity, linkage mapping, Qualitative Trait Loci (QTL) will be used for implementing Marker-Assisted Selection (MAS)

4. increase knowledge of Indonesian research worker in breeding and genetic improvement of valuable tree species, thus greater capability to carry out such a program using their own resources.

5. well equipped and established facilities will be available to continue the breeding and genetic improvement program into the next breeding cycles.

6. strengthening of institutional capability to plan and implement research and development on tree breeding and genetic improvement.

Time Frame

The implementation period of the project is expected to be five years. The project is expected to start in the beginning of 1997 to take full advantage of the momentum left by Phase I of the Indonesia-Japan Forest Tree Improvement Project.

Budget

The project is expected to spend a total of US $ 2.0 million over 5 years period or US $ 400,000 annually.

ENVIRONMENTAL AND SOCIAL IMPACT OF THE PROJECT

The immediate impacts of the Project are : i). a significant increase in wood production per unit area; ii). as plantation is becoming a more profitable investment due to high productivity more marginal land will be converted to plantations; iii). conservation of genetic resources works will be more active; iv). through transfer of skills and knowledge the intellectual ability of Indonesian researches will be further improved thus strengthening research capability.

Plantations establishment in general has a number of positive environmental impacts, particularly in cases when degraded lands are rehabilitated. These include:

1). abundant supply of wood from plantations will relieve utilization pressure on the depleting tropical rain-forest.

2). improved soil and water conservation, better regulation of water run-off thus protecting agricultural croplands.

3). Multipurpose and HTI species such as *Acacia mangium, Acacia auriculiformis* increase soil fertility as they nitrogen.

The Project will indirectly contribute to those positive environmental impacts. Industrial plantations program is expected to maintain the economic importance of forestry resources to the Indonesian economy by taking over the role of tropical rain forest as the major source of timber.

Plantations for industrial purposes such as HTI can also have negative environmental impacts, especially in cases when:

1). Natural forest (primary or secondary forests) is cleared and converted to plantations.

2). inappropriate species are planted as it will cause environmental and economical loss.

The Project outcomes will, among other things, prevent the use of inappropriate species.

There has been concerns over possible risks of having monoculture plantations. The Project will provide valuable genetic resources and information to ensure that monoculture plantation dose not threat to the environment. This is achieved through producing a wide genetic base of selected species thus maintaining genetic diversity. Significant contribution of the project to the successful implementation of the industrial plantation program (HTI) would have a significant indirect contribution to the creation of badly needed employment and thus increase income in rural areas.

Project Cost

a. Foreign Exchange Cost	USD	4,000,000
b. Local Cost	USD	1,000,000
Total Cost	USD	5,000,000

10 カウンターパート配置一覧

平成8年度11月18日現在

分野	C／P名	予定年月	配属状況 1992年 1993年 1994年 1995年 1996年 1997年 (4 7 10 1 4 7 10 1 4 7 10 1 4 7 10 1 4 7 10 1 4 7)	本邦研修 年度	本邦研修 主な研修先	備考（技術移転・技術習得状況等に関するコメント等）
I 種子源開発 1 種子源確保	・Achsad Agus Munawar,BSc.		93.2.17 - 4.29	4	林木育種センター	現在当研究所企画調整担当
	・Arif Nirsatmanto,BSc.		94.2.23 - 4.22 Nov.18/96	5	林木育種センター	A．表下▼参照
	・Mudjj Susanto,BSc.		95.6.20 - 7.29 Jan.1/96	7	北海道林産試験場	A．表下▼参照
	・Agatha Sunliowati,BSc.(転勤)			未		ジャカルタ本省に転勤
	・KHARISMA,MSc.		Nov.18/96	未		B．表下▼参照
	・AGUS Sofyan,MSc.(転勤)		Oct.30/96	未		B．表下▼参照
I 種子源開発 2 種子源造成	・M. CHAROMAINI,BSc.		Nov.18/96	8	林木育種センター	B．表下▼参照
	・BUDI Leksono,MSc.		95.9.16 - 10.16 Nov.18/96	未		B．表下▼参照
	・SIGIT,MSc.		Nov.18/96	未		B．表下▼参照
I 種子源開発 3 種子源評価	・GATOT Nurtinggih			未		A．表下▼参照
	・Arif Nirsatmanto,BSc.		Nov.18/96	5	林木育種センター	A．表下▼参照
	・BUDI Leksono,MSc.		2 Oct.30/96	未		B．表下▼参照
	・KHARISMA,MSc.		Nov.18/96	未		B．表下▼参照
	・Mudjj Susanto,BSc.(材質評価)		Nov.18/96	7	北海道林産試験場	A．表下▼参照
	・Siti SUSILOWATI,MSc.		Nov.18/96	未		B．表下▼参照
	・DIDIK Purwito,MSc.		Nov.18/96	未		B．表下▼参照
	・ANTO Rinbawanto,Ph.D.		95.9.4 - 12.5 Nov.18/96	7	九州大学	A．表下▼参照
	・AYPBC WIDYATMOKO		94.6.5 - 8.2 Nov.18/96	6	林木育種センター	A．表下▼参照
II 増殖技術	・Y.TOGU SIAGIAN,BSC.		Nov.18/96	未		B．表下▼参照
	・TONI HERAWAN,BSC.		93.2.17 - 4.29 Nov.18/96	4	林木育種センター	A．表下▼参照
	・USMANSYAH,BSC.		Nov.18/96	未		B．表下▼参照
	・ATOX Subiakto,(転勤)		Oct.30/96	未		B．表下▼参照
	・SUGENG Pudjono,BSc.		94.2.13 - 4.6 Nov.18/96	5	林木育種センター	A．表下▼参照
	・RINA Laksmi H.,MSc.		95.1.10 - 3.29 Nov.18/96	6	林木育種センター	A．表下▼参照
	・PARLINDUNGAN Tambunan,BSc.		Nov.18/96	未		B．表下▼参照
	・Siti SUSILOWATI,MSc.		Nov.18/96	未		B．表下▼参照
	・DIDA Syamsuwida,MSc.		Mar.1/96	未		B．表下▼参照
III 材料情報の提供 IV 林木育種推進のための助言	・S.SOESIPTO			5	林木育種センター	A．表下▼参照
	・NANI Cahyani(転勤)			未		ジャカルク本省に転勤
	・Mudjj Susanto,BSc.			7	北海道林産試験場	A．表下▼参照
	・HENDI Subaendi,Ph.D.		95.11.12 - 11.21 Nov.18/96	7	林木育種センター	A．表下▼参照
	・ANTO Rinbawanto,Ph.D.		Nov.18/96	7	九州大学	A．表下▼参照
	・TUKIMIN,BSc.		Nov.18/96	未		B．表下▼参照
	・DIDA Syamsuwida,MSc.		Mar.1/96	未		B．表下▼参照

※業務等が数名いる（1996年11月18日現在）．業務分野に以下の通り．
1)Arif Nirsatmanto,BSc.（種子源造成・種子源評価）
2)Mudjj Susanto,BSc.（種子源造成・種子源評価）
3)KHARISMA,MSc.（種子源造成・種子源評価）
4)Siti SUSILOWATI,MSc.（種子源評価・増殖）
5)BUDI Leksono,MSc.（種子源造成・種子源評価）
6)ANTO Rinbawanto,Ph.D.（種子源評価・林木育種推進及び材料情報の提供）

▼ A ほぼ習得し，実務に活用できる．
B 習得にやや不十分で，実際実務に活用できないことも多少ある．
C 習得は不十分で，実際実務への活用も不十分である．
D 習得にほとんど出来ておらず，実際実務への活用も全く出来ない．

11　専門家派遣実績

平成8年11月18日現在

項目		予定年 専門家氏名：指導項目	1992年 4 7 10	1993年 1 4 7 10	1994年 1 4 7 10	1995年 1 4 7 10	1996年 1 4 7 10	1997年 1 4 7
専門家派遣	長期	田畑卓爾：リーダー	6・25		7・24			
		古越隆信：リーダー		8・23				5・31
		森　敬人：種子源造成	6・9		6・8			
		橋本秀二：種子源造成		6・9				5・31
		福西城忠：種子源評価	6・9			12・7		
		黒延　晉：種子源評価			1・10			2・28
		立仙敏彦：増殖	6・9		6・8			
		近藤博夫：増殖			2・16			2・15
		橋本秀二：業務調整	6・9		6・8			
		高橋武彦：業務調整		7・11				5・31
	短期	黒延　晉：種子源評価	9・14	10・27				
		黒延　晉：種子源評価		1・28	3・6			
		田島正啓：着花促進		6・1	7・17			
		丹藤　修：種子管理		7・5	8・27			
		黒延　晉：採種林造成		8・19	10・26			
		黒延　晉：採種林造成		12・1	2・1			
		黒延　晉：種子源評価			5・11	6・29		
		田島正啓：着花促進			6・14	7・28		
		近藤禎二：組織培養			8・15	9・23		
		白石　進：DNA分析				3・14	3・21	
		保坂和昭：機材保守				12・4	12・17	
		安久津久：材質評価				1・10	2・25	
		金指達郎：種子生産技術				2・13	3・10	
		白石　進：DNA分析					4・9	5・2
		河崎久男：統計処理					8・20	9・17
		白石　進：DNA分析					8・20	9・17
		栄花　茂：材質評価					9・2	9・17

12　研修員受入実績、他

日本側／相手国側受入実績一覧表　（C／P研修実績表、その他）　　平成8年11月18日現在

予算年 活動項目	1992年 4 7 10	1993年 1 4 7 10	1994年 1 4 7 10	1995年 1 4 7 10	1996年 1 4 7 10	1997年 1 4 7
C／P研修実績	93.2.17 __4.29 Toni Herastmanto 93.2.17 __4.29 Ahmad Agus Munawar 93.6.16 __8.3 S.Soecipto 93.7.5 __8.3 Ibrahim 94.2.13 __4.6 Sugeng Pudjono 94.2.23 __4.27 Arif Nirsatmanto 94.6.5 ___8.2. AYPBC Widayatmoko 94.10.2 _10.15 H.Oemi (UGM) 95.1.10 ___3.29 Rina Laksmi.H 95.6.20 _7.29 Mudji Susanto 95.9.4 ___12.3 Anto Rinbawanto 95.11.14 _11.21 Hendi Suhaendi 96.6.2 _6.11Toga Silitonga 96.9.16 __10.16 M. Charomaini					
現地活動経費	計画額Rp.112,044,000 実績額Rp.112,044,000	計画額Rp.135,416,100 実績額Rp.135,416,100	計画額Rp.214,169,400 実績額Rp.214,169,400	計画額Rp.283,977,000 実績額Rp.283,977,000	計画額Rp.266,916,000 実績額Rp.243,575,000	
相手国側受入実績	・種子源造成（評価含） Rp.85,641,000 ・増殖 Rp.18,903,000 ・林木育種推進 Rp.32,110,000	・種子源造成（評価含） Rp.66,6824,000 ・増殖 Rp.50,675,000 ・林木育種推進 Rp.116,250,000	・種子源造成（評価含） Rp.119,430,000 ・増殖 Rp.45,830,000 ・林木育種推進 Rp.21,640,000	・種子源造成（評価含） Rp.487,670,000 ・増殖 Rp.275,380,000 ・林木育種推進 Rp.22,600,000	・種子源造成（評価含） Rp.380,529,000 ・増殖 Rp.145,050,000 ・林木育種推進 Rp.58,075,000	
調査団	・計画打合調査団 団員数（4） 1992.10.13～10.23	・巡回指導調査団 団員数（3） 1993.8.19～9.1	・巡回指導調査団 団員数（4） 1994.11.28～12.10		・終了時評価調査団 団員数（6） 1996.11.18～12.3	
リーダー会議	・チームリーダー 田畑卓爾 ・マレイシア、 1993.2.15～2.20	・チームリーダー 田畑卓爾 東京 1994.2.1～2.8	・チームリーダー 古越隆信 バンコク 1995.2.13～2.18	・チームリーダー 古越隆信 東京 1996.1.25～2.2	・チームリーダー 古越隆信 ジャカルタ 1997.1.27～1.31	
調整員会議		・業務調整 橋本浩二 マレイシア 1993.10.4～10.8		・業務調整 高橋武彦 マニラ 1994.10.23～10.27		
国内委員会等						

無償資金協力概要　①内容　研究施設及び機材費
②E/N時期　第1期－平成2年8月、金額8．03億円　第2期－平成3年8月、金額4．66億円
③完了時期　平成4年7月

13　機材の供与実績および利用・管理状況

（1）供与実績

年度		92	93	94	95	96
供与機材	現地調達	4輪駆動車 Rp.220,720,000	試薬類等 Rp.139,820,000	動力噴霧器等 Rp.154,870,000	ミニバス等 Rp.346,169,000	無
	本邦購送	運搬車 18,024千円	自動ミスト装置等 12,265千円	コンピューター等 15,029千円	画像解析装置等 11,725千円	シーケンサー等 20,000千円
携行機材 （購送・輸送合計）		1,835千円	2,244千円	2,275千円	2,908千円	2、225千円 （終了時評価時点）

（2）機材の利用・管理状況

平成８年度第３四半期現在

供与年度	番号	機材名（メーカー名・型式）	価格	数量	利用（保管）場所	利用状況	管理状況	備考（特記事項）
平成４年度本邦購送供与機材（160万円以上の機材）								（単位:万円）
各分野共通								
平成４年	1	林木育種関連図書、4 set and 35 books	255	-	図書室	B	A	
平成４年	2	運搬車(クボタ, CF-1800-3型)	215	2		B	A	
平成４年度現地調達供与機材（160万円以上の機材）								（1Rp=18円換算）
各分野共通								
平成４年	3	４輪駆動車（ダイハツ）	242	4	調査・業務	A	A	
平成４年	4	ピックアップ（三菱コルトL-300）	132	1	調査・業務	A	A	
平成４年	5	複写機（キャノン、NP-1215）＋付属部品	124	2	秘書室、専門家室	A	A	
平成５年度本邦購送供与機材（160万円以上の機材）								（単位:万円）
各分野共通								
平成５年	1	林木育種関連図書	511	-	図書室	B	A	
平成７年度現地調達供与機材（160万円以上の機材）								（1Rp=20円換算）
各分野共通								
平成７年	1	ミニバス（三菱コルトL-300）	750	1	調査・業務	B	A	
平成７年	2	４輪駆動車（「いすず」パンサー）	485	2	調査・業務	A	A	

利用状況は、次の区分により記号で表示する。

A：頻繁に使用（日常的に使用）。

B：良く使用（週に１～３回）。

C：特定の時期に集中的に使用（理由を備考欄又は処分理由等欄に記入）。

D：現在のところあまり利用されていない（年に３～11回、理由を備考欄又は処分理由等欄に記入）。

E：特別な理由により使用されていない（理由を備考欄又は処分理由等欄に記入）。

管理状況は、次の区分により記号で表示する。

A：点検整備が十分に行われ、常に使用可能な状態で管理している。

B：使用に際しては特段の問題はなく、管理はおおむね良好。

C：整備を行えば使用可能な状態にある。

D：使用は困難な状態である。

平成４年度供与機材（10万円以上160万円未満の機材）

供与年度	番号	機材名（メーカー名・型式）	供与数	処分数	現有数	利用状況	管理状況	処分理由
各分野共通								
平成４年	1	ワードプロセッサー（ModelMIN-5SX）	1		1	A	A	
平成４年	2	コンピュータ（東芝 DYNA BOOK J-3100sx）	2		2	A	A	
平成４年	3	コンピュータ（NEC PC-9801NS/T40）	2		2	A	A	
平成４年	4	プリンター（グラフティク、MP4300型）	1		1	D	B	
種子源評価分野								
平成４年	5	シュピーゲルレラスコープ	3		3	C	A	
増殖技術分野								
平成４年	6	ダブルシェイカー（タイテック、ModelNR-30）	1		1	A	A	
平成４年	7	真空ポンプ（IUCHI、Model DW-60）	1		1	A	A	
平成４年	8	パワーホモジナイザー（IUCHI、ModelS-303）	1		1	A	A	
平成４年	9	ホモジナイザー冷却ユニット（IUCHI、CB-20）	1		1	A	A	
平成４年	10	超音波ピペット洗浄器（IUCHI、ModelUT-50）	1		1	A	A	
平成４年	11	魚眼レンズ（キャノン、8mm F2.8S）	1		1	C	A	
平成４年	12	葉緑素計（ミノルタ、SPAD-502型）	1		1	C	A	
平成４年	13	デジタル照度計（ミノルタ、T-1M型）	2		2	B	A	
平成４年	14	グリーンハウス 1815BL	1		1	A	A	
平成４年	15	気象観測測定データ処理ソフト(KADEC)	1		1	E	D	

平成５年度供与機材（10万円以上160万円未満の機材）

供与年度	番号	機材名（メーカー名・型式）	供与数	処分数	現有数	利用状況	管理状況	処分理由
各分野共通								
平成５年	1	消防ポンプ	1		1	A	A	
平成５年	2	パワーサプライ, AE-8400	1		1	A	A	
平成５年	3	無停電電源装置（TUPS-500H500VA）	2		2	A	A	
種子源造成分野								
平成５年	4	農業用トラクター、クボタ(40HP)	1		1	C	A	
平成５年	5	トラクター用トレイラー(3 ton)	1		1	C	A	
平成５年	6	プラウ（Sugano Model OS123:12-12-14×2）	1		1	C	A	
平成５年	7	ミキサー（Kuda Model MX-125、3HP）	1		1	C	A	
増殖技術分野								
平成５年	8	スプリンクラー（" EIWA"NCH-505）	2		2	C	A	
平成５年	9	自動ミスト装置一式（Pipe,Joint,etc）	2		2	A	A	
平成５年	10	スプリンクラー（" EIWA"NCH-505）	2		2	A	A	
平成５年	11	恒温式スラブ電気泳動装置, NA-1116	1		1	A	A	
平成５年	12	Circulating Liquid Cooling System	1		1	A	A	
平成５年	13	Pure Water System No.11-1038-01	1		1	A	A	
平成５年	14	Refrigerator GA-A41EC	1		1	A	A	
平成５年	15	ミスト装置コントローラー（RAINBIRD）	1		1	A	A	

平成６年度（10万円以上160万円未満の機材）

供与年度	番号	機材名（メーカー名・型式）	供与数	処分数	現有数	利用状況	管理状況	処分理由
プロジェクト運営管理								
平成６年	1	コンピュータ（Power Macintosh 7100）	1		1	A	A	
平成６年	2	プリンター（Apple Laser Writer Select 360）	1		1	A	A	
平成６年	3	複写機（キャノン、NP-1215）＋付属部品	1		1	A	A	
平成６年	4	携帯電話	2		2	A	A	
各分野共通								
平成６年	5	コンピュータ（NEC PC-9801NS/A340）	1		1	A	A	
平成６年	6	コンピュータ（NEC PC-9801NS/A340）	1		1	A	A	
平成６年	7	コンピュータ（COMPAQ 4/33C 170WF ）	1		1	A	A	
平成６年	8	DCパワーサプライAE-8400	1		1	A	A	
平成６年	9	エアーコンプレッサー,CT-255PB	1		1	A	A	
平成６年	10	エアーホースリール、AR-1920	1		1	A	A	
種子源造成分野								
平成６年	11	動力噴霧器一式、MS410EC-3K	1		1	A	A	
平成６年	12	GPS受信機	1		1	D	B	
平成６年	13	万力（LEAD TYPE）、SV-200	1		1	A	A	
種子源評価分野								
平成６年	14	比重計、EW-120SG	1		1	A	A	
平成６年	15	木材試験機、PYLODYN	4		4	C	A	
平成６年	16	ページプリンター、PC-PR2000/4R	1		1	A	A	
平成６年	17	コンピュータ（NEC PC-9821As2）	1		1	A	A	
平成６年	18	コンピュータ用AVR、SACE-1KH	1		1	A	A	
平成６年	19	コンピュータ用UPS、CONSIP-1000AF	1		1	A	A	
平成６年	20	電子比重計、ED120T	1		1	A	A	
平成６年	21	Software for statistical Analysis	2		2	A	A	
平成６年	22	Computer（COMPAQ Pro-linea 4/66）	1		1	A	A	
平成６年	23	Printer, PANASONIC KX-P1121	1		1	A	A	
増殖技術分野								
平成６年	24	ダブルシェイカー（タイテック、ModelNR-30）	1		1	A	A	
平成６年	25	自動写真撮影装置付実体顕微鏡、SZH10-130	1		1	A	A	
平成６年	26	自動露出写真撮影装置、PM-10AK-3-35AC	1		1	A	A	
平成６年	27	Sprinkler Controller（RAINBIRD）	1		1	C	A	

平成７年度供与機材（10万円以上160万円未満の機材）

供与年度	番号	機材名（メーカー名・型式）	供与数	処分数	現有数	利用状況	管理状況	処分理由
プロジェクト運営管理								
平成７年	1	コンピュータソフトウェア	5		5	A	A	
平成７年	2	イメージスキャナー(EPSON GT-5000)ソフト付	1		1	A	A	
平成７年	5	無停電電源装置(YAMABISHI CONSIP-100AF)	1		1	A	A	
種子源評価分野								
平成７年	14	AMPLICATION DEVICE FOR DNA	1		1	A	A	
平成７年	15	AMPLICATION DEVICE FOR DNA	1		1	C	A	
平成７年	16	SPECTROPHOTOMETER	1		1	A	A	
平成７年	14	ウルトラマイクロポロニウムセル	2		1	A	A	
平成７年	16	FOTO ANALYST Ⅱ	1		1	A	A	
平成７年	17	POWER MACINTOSH 8100	1		1	A	A	
平成７年	18	SUBMARINE ELECTROPHORESIS(NBC-2015	1		1	A	A	
平成７年	19	SUBMARINE ELECTROPHORESIS(NC-1017)	1		1	A	A	
平成７年	20	CENTRIFUGAL EVAPORATOR (MILLI-DRY)	1		1	A	A	
平成７年	21	ULTRA PURE WATER SYSTEM	2		2	A	A	
平成７年	22	DRY･HEAT STERILIZER	1		1	A	A	
平成７年	23	ICE MAKER	1		1	A	A	
平成７年	21	INCUBATOR SHAKER INOVER 4300	1		1	A	A	
平成７年	22	CONSTANT TEMPERATURE WATER	1		1	A	A	
平成７年	23	CAMERA FOR MULTI USE	1		1	A	A	
平成７年	21	TRANSILLUMINATOR(T2202)	2		2	A	A	
平成７年	22	AUTO PIPETTE	1		1	A	A	
平成７年	23	HYBRIDIZATION INCUBATOR HB-R	1		1	A	A	
増殖技術分野								
平成７年	3	実験用流し台	1		1	A	A	

14 両国の経費負担実績

ANNUAL WORK PROGRAM F.Y 1992/1993 ~ 1995/1996 & 1996/1997
PROJECT PERIOD: JUNE, 1992 UP TO MAY, 1997
AGENCY /PROJECT: AFRD-JICA, FOREST TREE IMPROVEMENT PROJECT

(US$)

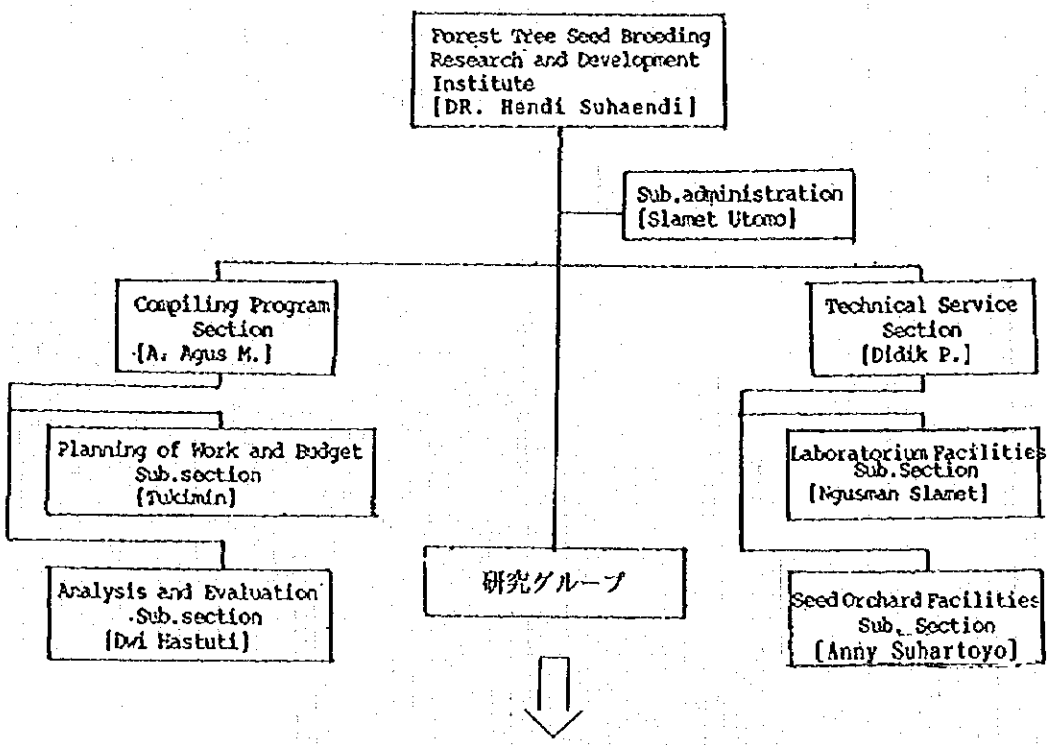
Category	Item/ Activities	FISCAL			FINANCIAL				BUDGET FOR 96/97	
		Total Target	Achievement Up To 95/96	Target 96/97	Total Allocation		Expenditure up to 95/96			
					GOI US$	Grant US$	GOI US$	Grant US$	GOI US$	Grant US$
1	2	3	4	5	6	7	8	9	10	11
	Japanese Government doneted US$12,745,000 (¥ 1,300,000,000) in 3 years (from 1990 to 1992) to complete the main buliding of Forest Tree Improvement Reserch & Development Institute and the other faciliteis and necessary equipments. In fiscal year 1995/1996 Japanese side is investigating to donate equipments to be installed in the experimental station in Wonogiri, which amounts to about US$ 9,800 (¥1,000,000).				2,073,000	9,402,000 1995/96 1,636,000	2,073,000	9,402,000 1995/96 1,636,000	1,009,000	1,637,000

Project Manager/ Counterpart
(DR. Hendi Suhaendi)

Team Leader
(DR. Takanobu Furukoshi)

15　林木育種研究所組織図

COMPILATION OF ORGANIZATION AND WORK SYSTEM
IN FOREST TREE SEED BREEDING RESEARCH AND DEVELOPMENT
INSTITUTE



研究グループ

1. Genetic Improvement (population genetic)
2. Reproductive Biology
3. Vegetative Propagation
4. Molecular Genetics
5. Gene Conservation
6. Microbiology and Pathology

16　合同委員会開催実績

1．第一回合同委員会

1992年５月31日

場所　ジャカルタ

議題

１）1992/1993年度活動実績承認

２）1992/1993年度活動計画承認

2．第二回合同委員会

1994年12月６日

場所　ジャカルタ林業省内

議題

１）1993/1994年度活動実績承認

２）1994/1995年度活動計画承認

３）新設林木育種研究所の国家林木育種事業に対する役割

3．第三回合同委員会

1995年７月26日

場所　ジョグジャカルタ林木育種研究所内

議題

１）1994/1995年度活動実績承認

２）1995/1996年度活動計画承認

３）林木育種研究所の活動とＪＩＣＡの活動支援

4．第四回合同委員会

1996年７月16日

場所　ボゴール

議題

１）1995/1996年度活動実績承認

２）1996/1997年度活動計画承認

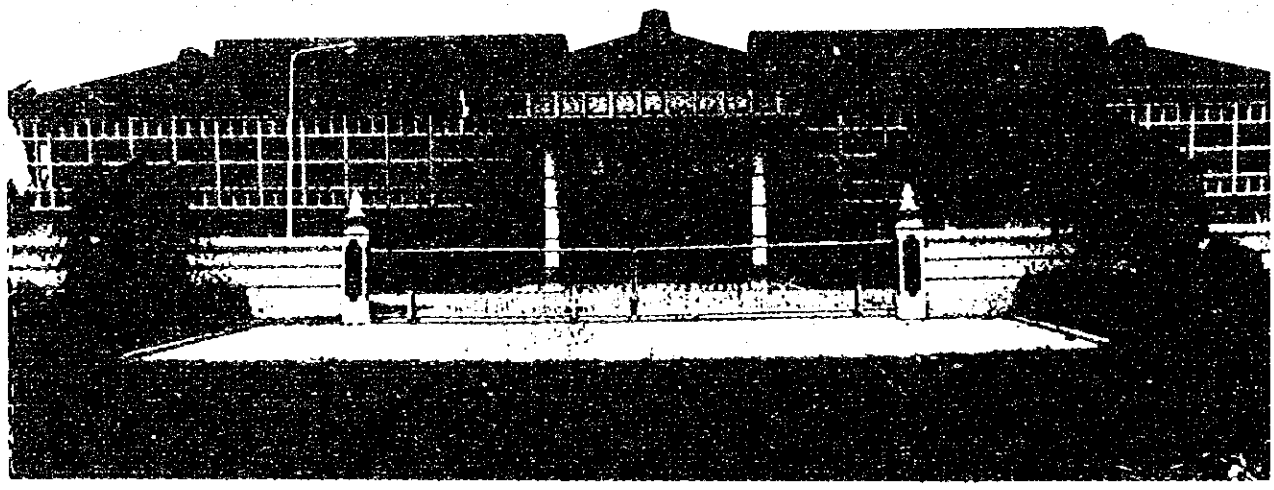
３）現行ＦＴＩＰプロジェクト終了後の対応について

Agency for Forestry
Research and Development

JAPAN INTERNATIONAL
COOPERATION
AGENCY

FOREST TREE IMPROVEMENT PROJECT IN INDONESIA

PROYEK PEMULIAAN POHON HUTAN DI INDONESIA



Balai Penelitian dan Pengembangan Pemuliaan Benih Tanaman Hutan
(Forestry Tree Improvement Research and Development Institute)

March 1996

1. Background

The Government of Indonesia has planned to reach about 4,400,000 hectares of Industrial Forest Plantation (HTI) until the year 2000. The aim of HTI is environment conservation with high consideration to maintaining a sustainable yield of forest resources.
One of the main factors in promoting HTI is a stable high quality seed supply. To meet the urgent demand of genectically improved seeds, seed sources developed by application of tree improvement principles are reliable sources genetically improved seeds for plantations.

2. Establishment of Forest Tree Improvement Project

Basic implementation of the project started 1990, with the cooperation between the governments of Indonesia and Japan through the Forestry Department in the Tree Improvement Program. In this cooperation, the government of Japan has provided assistance including grant aid (buildings and other facilities as 1.3 billion yen), provision of equipment and dispatch of expert. The technical assistance started in June 1992, involving 5 experts from Japan and 11 counterparts from Indonesia.
Since 1994, the project, previously managed by the Directorate General of Reforestation and Land Rehabilitation, has been developed both in terms of institution and its activities. The new institution is ***Balai penelitian and Pengembangan Pemuliaan Benih Tanaman Hutan (BP3BTH)*** and managed by the Agency for Forestry Research and Development.

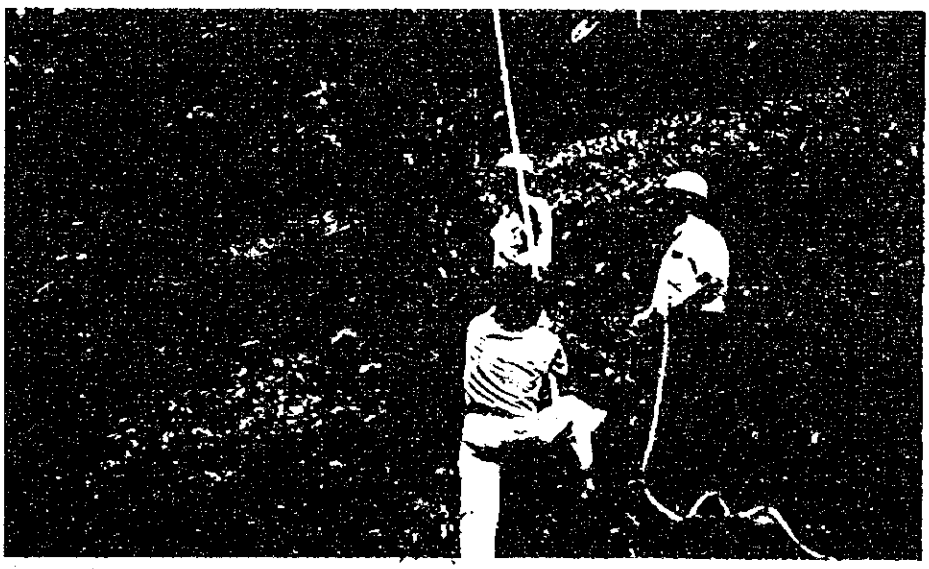
3. Institute for Project Implementation

(1) Name : Balai Penelitian dan Pengembangan Pemuliaan Benih Tanaman Hutan
(Forest Tree Improvement Research and Development Institute)

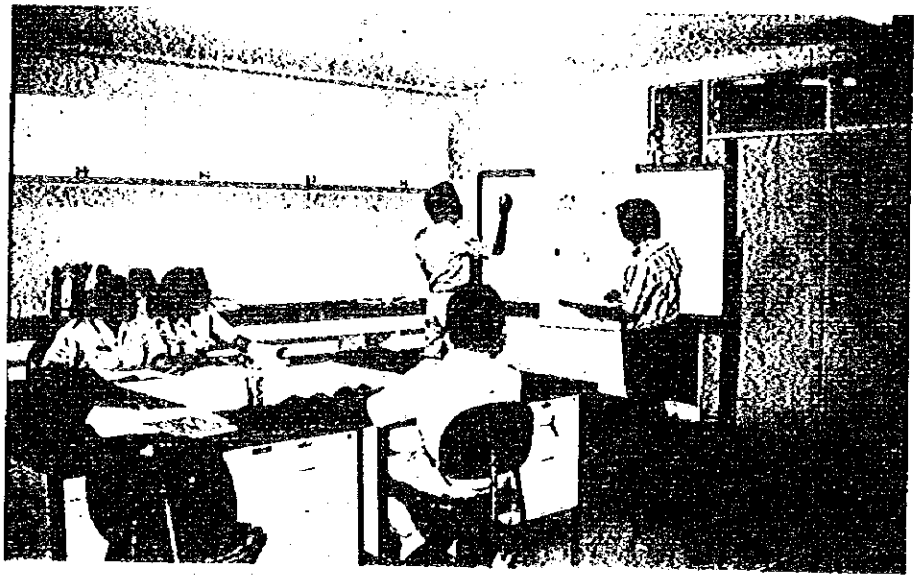
(2) Location : Desa Purwobinangun, Kecamatan Pakem, Kabupaten Sleman,
Propinsi Daerah Istimewa Yogyakarta

(3) Facilities :
- Area : 5.5 hectares
- Building :
  - main buildings (2,585 m²)
  - sawmill (280 m²)
  - glass house (155 m²)
  - other buildings (685 m²)
- Nursery, arboretum etc. (51,000 m²)

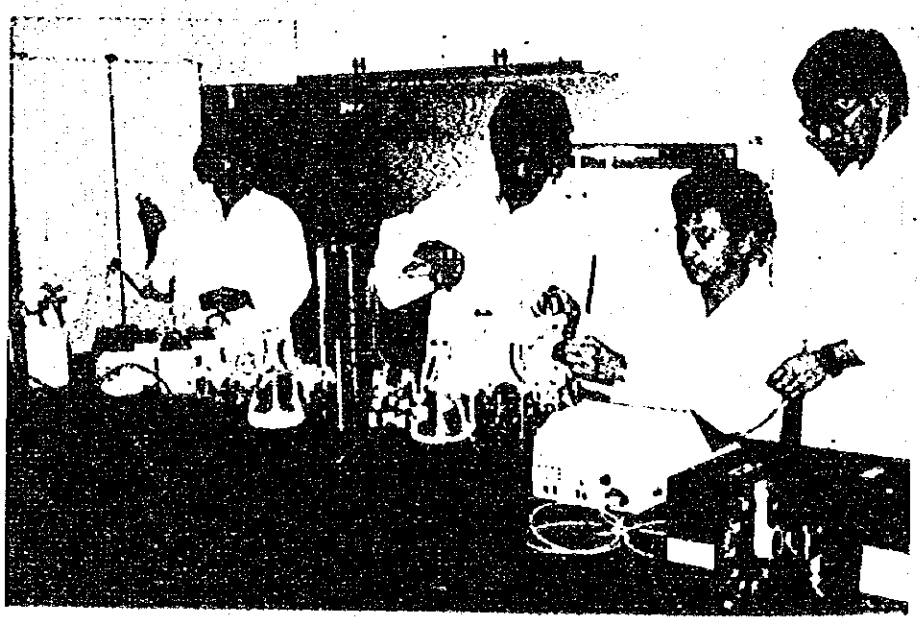
(4) Staff : 80 persons (including 21 researchers)



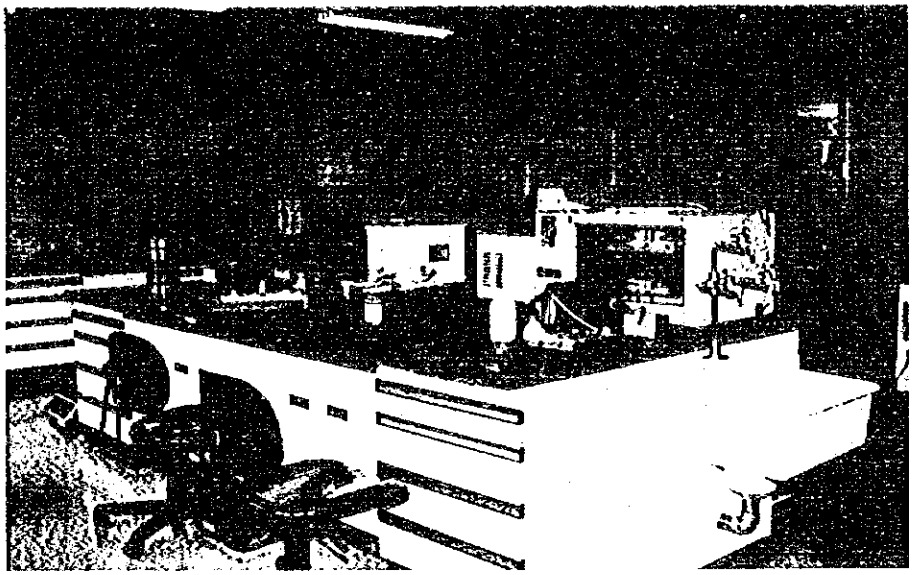
Field Survey



Discussion between Expert and Counterparts



Tissue Culture Laboratory



ISOZIME / DNA Analysis Laboratory

Performance by JICA Cooperation
(Pelaksanaan kerjasama oleh JICA)

Fiscal Year (Tahun Kerjasama oleh JICA)	1992	1993	1994	1995	1996
Long Term Expert (persons) [Tenaga Ahli Jangka Panjang (orang)]	5	5	5	5	5
Short Term Expert (persons) [Tenaga Ahli Jangka Pendek (orang)]	4	2	4	4	4
Counterpart Training in Japan (persons) [Counterpart Training di Jepang (orang)]	4	2	3	3	2
Provision of Equipment (Million Yen) [Pemberian Fasilitas Perlengkapan (Juta Yen)]	37	21	21	27	20

1996 FY : Estimation

[1996 Tahun Anggaran : Perkiraan]

1. Latar Belakang

Pemerintah Indonesia telah merencanakan target pembangunan Hutan Tanaman Industri (HTI) sampai tahun 2000 seluas 4.400.000 hektar. Tujuan dari pembangunan HTI tersebut adalah dalam rangka menjaga kelestarian lingkungan hidup melalui pemanfaatan sumber daya hutan secara lestari dan berkesinambungan.
Salah satu faktor yang cukup penting dalam menunjang keberhasilan pembangunan HTI adalah ketersediaan benih yang memadai secara kuantitas dan kualitas. Dalam rangka memenuhi kebutuhan benih unggul yang cukup mendesak tersebut, maka perlu segera diupayakan pembangunan kebun benih yang didasarkan prinsip-prinsip pemuliaan pohon dengan baik dan benar sebagai salah satu sumber produksi benih unggul yang baik.

2. Berdirinya Proyek Pemuliaan Pohon Hutan

Dasar pelaksanaan Proyek Pemuliaan Pohon Hutan dimulai tahun 1990 yaitu pada saat dimulainya kerjasama antara Pemerintah Jepang (JICA) dan Pemerintah Indonesia melalui Departemen Kehutanan dalam bidang Pemuliaan Pohon Hutan. Dalam kerjasama tersebut, Pemerintah Jepang telah memberikan bantuan kerjasama dalam bentuk dana hibah (bangunan gedung serta fasilitas perlengkapannya senilai 1,3 milyar yen), program penyediaan peralatan, dan pengiriman tenaga ahli (expert). Sedangkan pelaksanaan kerjasama teknik baru dimulai pada bulan Juni tahun 1992 yang dalam pelaksanaannya melibatkan 5 orang tenaga ahli dari Jepang dan 11 orang "counterpart" dari Indonesia.
Sejak tahun 1994, Proyek Pemuliaan Pohon Hutan yang sebelumnya dibawah pengelolaan Direktorat Jenderal Reboisasi dan Rehabilitasi Lahan (RRL) ditingkatkan statusnya menjadi Balai setingkat eselon III dibawah pengelolaan Badan Penelitian dan Pengembangan Kehutanan dengan nama Balai Penelitian dan Pengembangan Pemuliaan Benih Tanaman Hutan (BP3BTH).

3. Sepintas tentang BP3BTH (Organisasi Kerjasama Proyek)

(1) Nama : Balai Penelitian dan Pengembangan Pemuliaan Benih Tanaman Hutan
(Forest Tree Improvement Research and Development Institute)
(2) Lokasi : Desa Purwobinangun Kecamatan Pakem, Kabupaten Sleman,
Propinsi Daerah Istimewa Yogyakarta.
(3) Fasilitas : - Luas : 5,5 hektar
- Bangunan Pokok terdiri dari : - Gedung utama (2.585 m²)
- Tempat pemotongan kayu (280 m²)
- Rumah kaca (155 m²)
- Bangunan yang lain (685m²)
- Persemaian, arboretum dll (51.000m²)

(4) Jumlah Pegawai : 80 orang (termasuk 21 peneliti)

Plus Tree of P. Falcataria

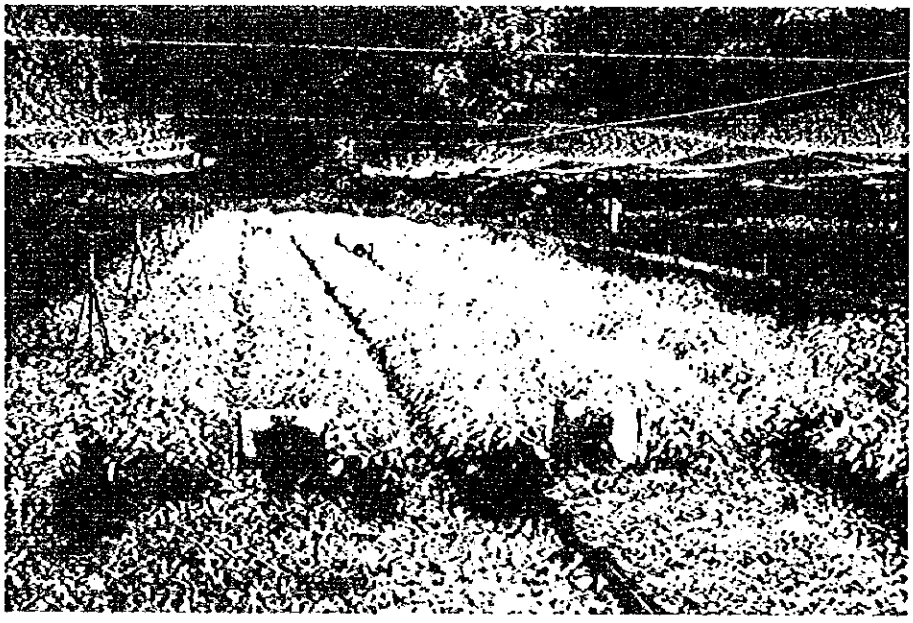
Vegetative Propagation (Airlayering)

Project Activities and Personel
[Kegiatan Proyek dan Staf]

PROJECT ACTIVITY (TSI)		STAFF	
		INDONESIA	JICA
GENERAL MANAGEMENT AFFAIRS		Project Manager : HENDI Suhaendi Ph.D. Staff : SLAMET Utomo, BSc. Achmad Agus M., BSc	Team Leader : Takanobu FURUKOSHI Ph.D. Coordinator : Takehiko TAKAHASHI B.E.
I. Development of Seed Sources	1. Seed Procurement	KHARISMA, MSc. AGUS Sofyan, BSc.	Kyoji HASHIMOTO, Msc. Susumu KURINOBU, Ph.D.
	2. Establishment of Seed Sources	M. CHAROMAINI, BSc. BUDI Leksono, MSc. MUDJI Susanto, BSc. ARIF Nirsatmanto, BSc. KHARISMA, MSc. SIGIT, MSc.	
	3. Evaluation of Seed Sources 3 - 1 Statistical analysis	ARIF Nirsatmanto, BSc. BUDI Leksono, MSc. KHARISMA, MSc. MUDJI Susanto, BSc.	Susumu KURINOBU, Ph.D. Kyoji HASHIMOTO, MSc.
	3 - 2 Assisment of wood character	MUDJI Susanto, BSc. Siti SUSILOWATI, MSc. DIDIK Purwito, MSc.	
	3 - 3 ISOZYME / DNA Analysis	ANTO Rimbawanto, Ph.D. AYPBC Widyatmoko, BSc.	Hiroo KONDO, MSc.
II. Development of Plant Propagation Techniques and the others	1. Vegetative Propagation Techniques	Y. TOGU Siagian, BSc. TONI Herawan, BSc. USMANSYAH, BSC. ATOK Subiakto, BSc. SUGENG Pudjiono, BSc.	Hiroo KONDO, MSc.
	2. Seed Production Techniques	RINA Laksmi, BSc. PARLINDUNGAN T, BSc DIDA Syamsuwida, BSc.	Takanobu FURUKOSHI, Ph.D.
III. Dissemination of Materials and Information	1. Information Management	HENDI Suhaendi, Ph.D. ANTO Rimbawanto, Ph.D.	Kyoji HASHIMOTO, MSc. Susumu KURINOBU, Ph.D. Hiroo KONDO, MSc.
	2. Information Service	HENDI Suhaendi, Ph.D. TUKIMIN, BSc.	
	3. Material and Technical Support	HENDI Suhaendi, Ph.D. DIDA Syamsuwida, MSc.	
IV. Advice to Promote Tree Improvement Activities		HENDI Suhaendi, Ph.D. ANTO Rimbawanto, Ph.D.	Takanobu FURUKOSHI, Ph.D.

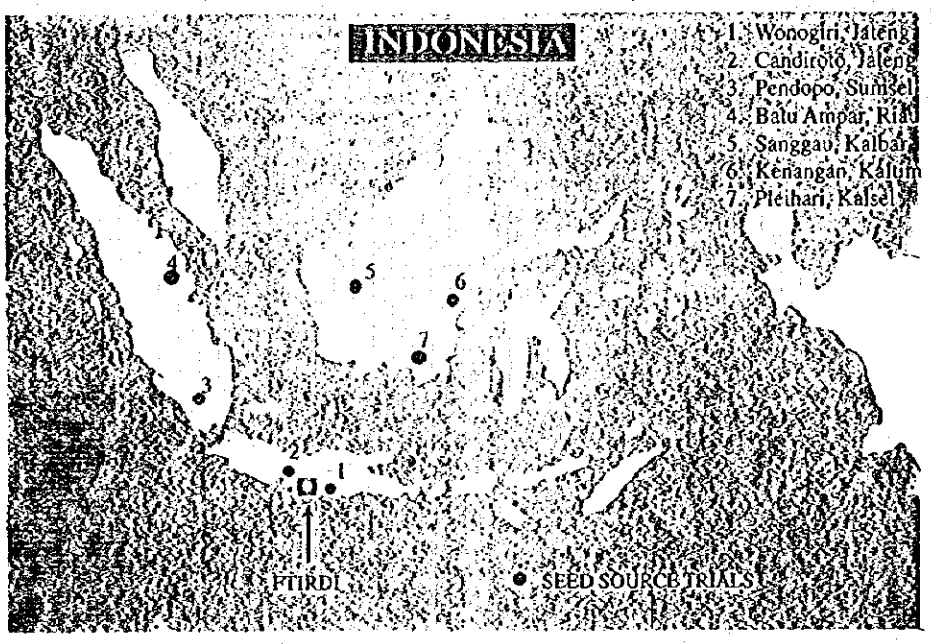
Jl. Palagan Tentara Pelajar Km. 15
Purwobinangun, Pakem, Sleman
YOGYAKARTA (55582)
Telp. (0274) 565132

Seed Source Trials

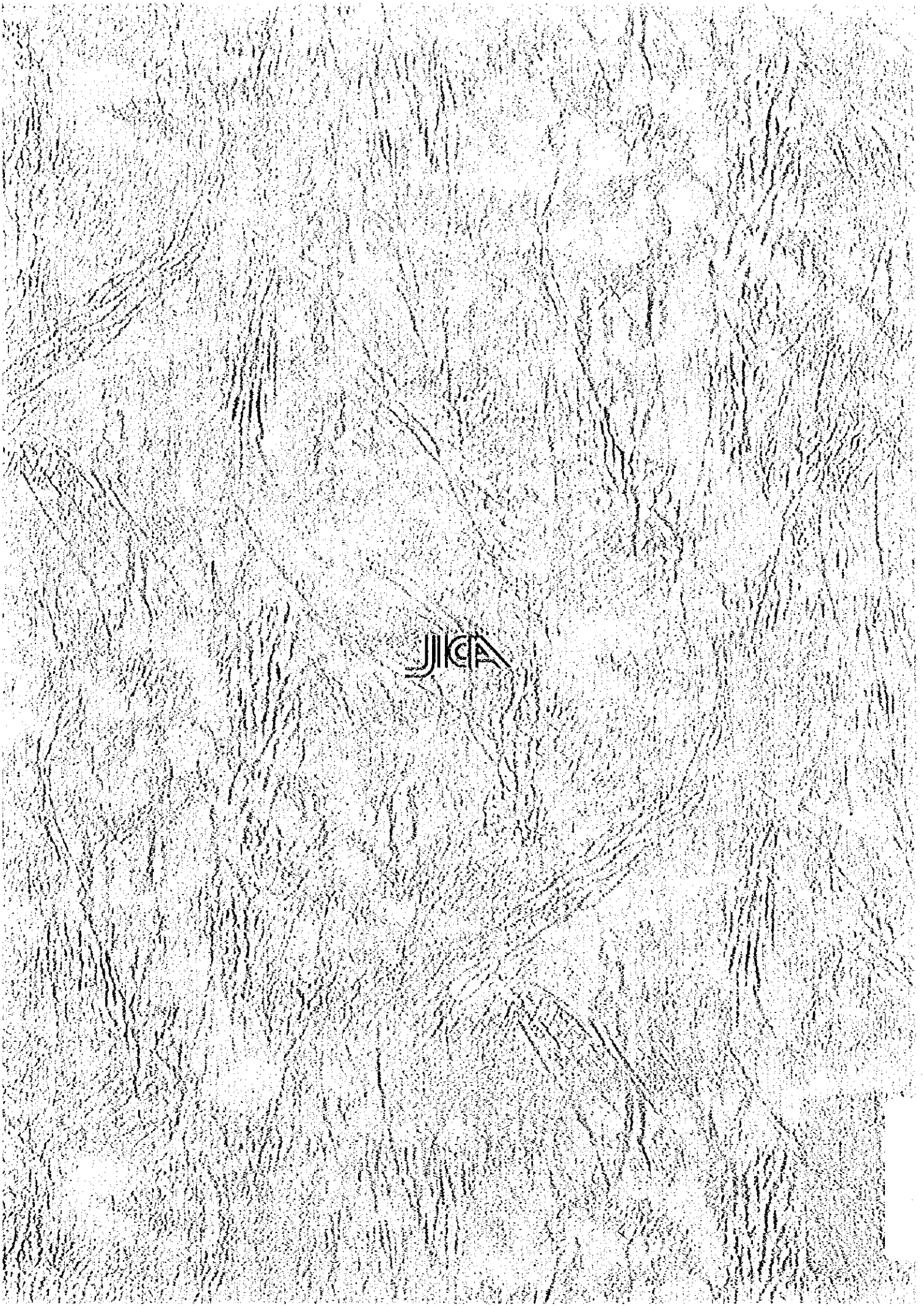


Nursery

Seed Source Trials



Location of Forest Tree Improvement Research and Development Institute (FTIRDI) and Seed Sources Trials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