MISSION MALAISIE

Collaboration CIRAD-ICSB

Tawau – Kota Kinabalu
20-28 juin 2000

Ph. Vigneron

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Objectifs

Le CIRAD-Forêt et Innoprise Corporation Sdn Bhd (ICSB) sont liés par un contrat de coopération (3ième PMOU) signé en juin 1997, courant sur cinq ans mais dont les termes étaient révisables à trois ans. La révision intervenue en juin 2000 met fin au positionnement à Tawau des deux agents Cirad, Antoine Galiana et Roberto Bacilieri, la collaboration devant se poursuivre sous forme de missions d'appuis.

Dans ce cadre, les objectifs de la mission étaient :

- de superviser la passation de service entre Cirad et ICSB, de transmettre l'ensemble des informations relatives aux travaux réalisés (données, plans des essais, notes diverses, recommandations) ainsi que d'officialiser la cession du matériel (voitures, micro ordinateurs, appareils divers) acheté par le Cirad ou conjointement avec ICSB ;
- de préciser les modalités de collaboration pour les deux années à venir et notamment de définir l'objet des missions d'appui à réaliser.

Déroulement de la mission

Mardi 20 juin 10h55

Départ de Montpellier.

Mercredi 21 juin, 15h

Arrivée à Tawau, installation et premières discussions avec Antoine Galiana et Roberto Bacilieri.

Jeudi 22 juin.

Visite SSSB (station de Brumas) : pépinière, test clonal Acacia, parc multiplicatif Acacia hybrides, ancien test d'hybrides A. mangium x auriculiformis, avec A. Galiana et Mohd. Hatta Jaafar, research manager.

Visite Luasong : essais teck (CCT plots, essais provenances), verger à graines d'Acacia mangium, essences diverses, avec A. Galiana, R. Bacilieri et David Alloysius.

Vendredi 23 juin.

Visite du Plant Biotechnology Laboratory (PBL) avec A. Galiana et Doreen Goh, discussions.

Rencontre de John Tay, adjoint de Chan Hin Hon et préparation des documents officiels de passation de service.
Dîner d'adieux organisé par ICSB.

Signature du document de passation de service concernant le PBL (John Tay, Doreen Goh, Antoine Galiana et Philippe Vigneron).

Samedi 24 juin.

Visite Taliwas avec Jikos Gidiman et R. Bacilieri : test clonal teck comparant plants issus de CIV, boutures horticoles et semis, terrain d'implantation du futur test clonal teck, parcelle de teck de 5 ans, essai provenances teck, test clonal Acacia, pépinière.

Dimanche 25 juin.

Discussions avec A. Galiana et R. Bacilieri. Etablissement de la liste des fichiers à fournir à ICSB et à rapatrier à Montpellier.

Lundi 26 juin.

Main office Tawau : finalisation du document de passation de service PISP. Signature du document par Andrew Garcia (directeur ICSB Tawau), Roberto Bacilieri et Philippe Vigneron.

Départ pour Kota Kinabalu.

Mardi 27 juin.

Réunion de synthèse à la direction d'ICSB en présence de Awang Sham Pulau (Directeur), Chan Hin Hon, John Tay, Doreen Goh.

Départ de Kota Kinabalu.

Mercredi 28 juin.

Arrivée Montpellier.

Commentaires

La mission a permis d'officialiser le transfert des données et du matériel. Les deux documents de passation (PISP et PBLab handing over documents) sont joints en annexe.

Les relations avec les chercheurs du PISP (David Alloysius et Jikos Gidiman) et du PBL (Doreen Goh) sont excellentes et permettent d'envisager une poursuite harmonieuse de notre collaboration.

La visite effectuée à SSSB a permis de se rendre compte de l'importance du travail réalisé par A. Galiana et Mohd. Hatta Jaafar (multiplication et mise à disposition de clones hybrides Acacia mangium x auriculiformis). Mohd. Hatta Jaafar et son équipe se sont déclarés très intéressés par la poursuite d'une collaboration portant sur l'ensemble du programme de recherche Acacia, génétique et sylviculture. Ils ont par ailleurs exprimé des besoins en formation (amélioration génétique, biométrie et sylviculture).
La réunion de synthèse a été l'occasion de réaffirmer notre volonté commune de collaboration (les missions se feront à frais partagés) et d'évoquer l'objet des missions à venir. Pour être efficaces, ces missions devront porter sur des sujets très précis et définis à l'avance. Pour cela, il a été demandé aux chercheurs d'ICSB (D. Goh, D. Alloysius et J. Gidiman) de préciser leurs attentes par écrit. Les objets possibles sont : analyses de certains essais présentant des difficultés d'interprétation (essai de provenances de teck, CCT plot), définition des dispositifs expérimentaux, prélèvement de bois pour des analyses technologiques, introduction in vitro de matériel végétal, sélection d'ortets teck quand l'essai provenance aura atteint 5 ans (2002).

En raison de la demande générale de formation en biométrie, nous avons proposé d'organiser sur place une session d'enseignement d'une dizaine de jours comprenant à la fois des cours, des visites d'essais ainsi que leur analyse. Cette formation devrait regrouper 5 à 10 chercheurs et ingénieurs d'ICSB et de SSSB. Cette proposition a été reçue très favorablement à la fois par les chercheurs et la direction d'ICSB. Elle ferait l'objet de la première mission d'appui.

Enfin, Chan Hin Hon propose que nous fassions une mission conjointe ICSB-Cirad pour évaluer les besoins de SSSB en recherche lorsque le plan stratégique de développement de cette société sera définitivement établi.

Publications : les travaux de recherche de ces dernières années peuvent faire l'objet de publications dans des journaux à comité de lecture. ICSB veut favoriser ces publications, qui pourront être faites par Antoine Galiana et Roberto Bacilieri associés aux chercheurs d'ICSB.

Plant Biotechnology Laboratory

ICSB-CIRAD

Handing over documents

June 2000

- List of equipments (Transferred to ICSB) ;
- List of plant materials currently maintained under in vitro culture ;
- List of plant materials transferred to Taliwas for field testing ;
- List of plant materials transferred to SSSB for field testing ;
- List of Rhizobium strains stored in the PBL.

Tawau, the 23rd of June 2000

- from ICSB : John TAY

Doreen GOH

- from CIRAD : Philippe VIGNERON

Antoine GALIANA

PBL

List of equipments for handing over

June 23, 2000

- Vehicle 4 x 4 « Toyota » Land Cruiser ;

- PC Portable Computer « AcerNote Light » (CIR 6684) ;

- PC Portable Computer « Acer AnyWare 386 S » * ;

- « Acer » Computer 1120 SX ;

- Printer « NEC Pinwriter P3300 » ;

- « Nikon » camera (FM 2) + 3 « Nikon » lenses (28-85 mm zoom lens, 75-210 mm zoom lense, Micro lens 55 mm) + « Nikon » Flash ;

- Microscope « Wild » + 8 lenses + accessories ;

- Computer table ;

- Analytical balance « AND ER-180A » ;

- Thermohygrometer « Hanna » ;

- Refrigirated centrifuge « Ole Dich InstrumentMakers APS » ;

- Two power supply units for electrophoresis « Titan Plus, Helena Laboratories » ;

- Power supply for electrphoresis « Apelex » ;

- Two vertical electrophoresis cells ;

- Four horizontal electrophoresis cells.

* Out of service

List of the clonal materials currently maintained in the PBL (June 2000)

1) *Acacia mangium x auriculiformis* hybrid :

- 21 selected clones from CIRAD-Forêt (Ivory Coast origin) :
Clones no. **1-1**, **1-24**, **2-28**, **3-21**, **3-26**, **4-15**, **4-24**, **5-13**, **5-15**, **6-5'**, **6-15**, **6-23**, **6-27**, **7-13**, **7-16**, **7-23**, **8-16**, **8-19**, **8-26**, **10-24** and **11-28.**

- 8 unselected clones from Luasong (same seedlot origin as clones from CIRAD-Forêt described above):
Clones no. **AH 8**, **AH 10**, **AH 11**, **AH12**, **AH 14**, **AH 15**, **AH 16** and **AH 17**.

- 12 selected clones from SSSB (Ulu Kukut and Silam origin) :
Clones no. **S 1**, **S 3**, **S 4**, **S 5**, **S 8**, **S 9**, **S 10**, **S 11**, **S 13**, **S 14**, **S 15** and **S 483.**

- 4 selected clones from SSSB (origin : Acacia hybrid clonal test Brumas 1993) :
Clones no. **S 18**, **S 19**, **S 20** and **S 21**.

2) *A. mangium* :

- 3 selected plus trees from CIRAD-Forêt (Ivory Coast origin) : Clones no. **4**, **15** and **21** ;

- 1 unselected clone from CIRAD-Forêt (juvenile origin from Queensland) : Clone no. **24**.

- 1 selected plus tree from FRR Taliwas : Clone no. **T4**.

- 1 unselected clone from FRR Taliwas : Clone no. **T3**.

3) *Acacia crassicarpa* :

- 7 selected plus trees from SSSB (origin : Acacia crassicarpa progeny trial in Brumas 1995) :
Clones no. **AC 6**, **AC 7**, **AC 11**, **AC 13**, **AC 14**, **AC 16** and **AC 18**.

4) *Tectona grandis*:

- 8 clones from Kota Marudu :
Clones no. **TG13**, **TG16**, **TG20**, **TG22**, **TG23**, **TG25**, **TG45** and **TG47**.

Setting up of two clonal tests on *Acacia mangium x auriculiformis* hybrids and *A. mangium* in Taliwas :

- Objectives :

1) Field assessment of the growth performances of selected clones from the PBL ;
2) Comparison of growth between selected *Acacia* hybrids and *A. mangium* selected plus trees ;
3) Testing the validity of an early selection in *Acacia* hybrids (Rufelds method + nitrogen fixation).

- Location of the trials : Taliwas Forestry Center

- Date of delivery of plantlets from PBL to nursery : March 1999

- Date of planting : October 1999

- Experimental designs :

1) 1st clonal test : Complete Random Block design -> 16 different treatments per block x 16 ramets per plot x 3 blocks (11 *A. mangium x auriculiformis* hybrid clones + 4 *A. mangium* clones + 1 *A. mangium* progeny) = 768 trees. Spacing : 3 x 3 m => Total area = 0.69 ha *

2) 2nd clonal test : Single-tree clonal test -> 25 treatments per block x 1 ramet per plot x 10 blocks (21 *A. mangium x auriculiformis* hybrid clones + 3 *A. mangium* clones + 1 *A. mangium* progeny) = 200 trees. Spacing : 3 x 3 m => Total area = 0.18 ha *

* without the three external lines of buffers

- List of the plant material tested :

1) 1st clonal test :

a) *A. mangium x auriculiformis* :

• Selected clones from CIRAD-Forêt : Clones no. **2-28**, **3-21**, **4-15**, **5-13**, **5-15**, **6-15**, **6-23**, **7-23** and **10-24** ;
• Clones from Luasong (Ivory Coast origin, same seedlot origin as clones from CIRAD-Forêt described above) : Clones no. **AH 12** and **AH 16**.

b) *A. mangium* :

• Selected seedlings : **Papua New-Guinea provenance** (seeds from Luasong) ;
• Selected plus trees from CIRAD-Forêt : Clones no. **4**, **15** and **21** (Ivory Coast origin) ;
• Clone from Taliwas : Clone no. **T3**.

2) 2nd clonal test :

a) *A. mangium x auriculiformis* :

• Selected clones from CIRAD-Forêt : Clones no. **3-19**, **3-21**, **4-15**, **4-24**, **5-13**, **5-15**, **6-5'**, **6-15**, **8-16**, **8-19**, **6-23**, **7-23**, **10-24** and **8-26** ;
• Clones from Luasong (Ivory Coast origin, same seedlot origin as clones from CIRAD-Forêt described above) : Clones no. **AH 8**, **AH 10**, **AH 11**, **AH 12**, **AH15**, **AH 16** and **AH 17**.

b) *A. mangium* :

• Selected seedlings : **Papua New-Guinea provenance** (seeds from Luasong) ;
• Selected plus trees from CIRAD-Forêt : Clones no. **21** and **24** (Ivory Coast origin) ;
• Unselected clone from Taliwas (10-year-old ortet) : Clone no. **T3**.

Proposed clonal test on *Acacia mangium x auriculiformis* hybrids and *Acacia mangium* in Brumas (Sabah Softwoods) :

- Objectives :

1) Field assessment of the growth performances of selected clones from different origins (*Acacia* hybrid clones from CIRAD-Forêt and Sabah Softwoods) ;
2) Comparison of growth between selected *Acacia* hybrids and *A. mangium*.

- Plant material :

1) *Acacia mangium x auriculiformis* hybrids :

- 11 selected clones from CIRAD-Forêt (Ivory Coast origin) :
Clones no. **3-21, 3-26, 4-15, 5-13, 5-15, 6-5', 6-15, 6-27, 7-23, 8-26** and **11-28 ;**

- 3 unselected clones from Luasong (same seedlot origin as clones from CIRAD-Forêt described above):
Clones no. **AH 10, AH 11** and **AH 12.**

- 12 selected clones from SSSB (Ulu Kukut and Silam origin) :
Clones no. **S 1, S 3, S 4, S 5, S 8, S 9, S 10, S 11, S 13, S 14, S 15 and S 483.**

- 2 selected clones from SSSB (origin : Acacia hybrid clonal test Brumas 1993) :
Clones no. **S 19** and **S 21**.

2) *A. mangium* :

- 3 selected plus trees from CIRAD-Forêt : Clones no. **4, 15** and **21** ;

- 1 unselected clone from CIRAD-Forêt (juvenile origin from Queensland) : Clone no. **24**.

- 1 **PNG progeny** : Seedlings collected from the selected seed orchard (SSO2) in Luasong Forestry Center.

- Experimental design :

Complete Random Block design : 4 replications per clone x 16 ramets per plot x 33 treatments = 2112 trees. Spacing : 3 x 3 m => Total area = 1.90 ha + 25 % with buffers = 2.4 ha.

- Location : Brumas

- Delivery of plantlets by the PBL to SSSB Brumas nursery : December 1999 to April 2000

- Scheduled planting date : August-September 2000

Updated list of the rhizobium strains available from the PBL in June 2000 :

Strain no.	Host species	Origin	Date of isolation
AH 8c	*A. mangium x*	Clone 8 (Luasong)	September 1997
AH 8h1	*auriculiformis* hybrid	"	"
AH 8h2	"	"	"
AH 8i	"	"	"
AH 8j	"	"	"
AH 8k	"	"	"
AH 10	"	Clone 10 (Luasong)	"
AH 11a	"	Clone 11 (Luasong)	"
AH 11b	"	"	"
AH 11c	"	"	"
AH 11 e	"	"	"
AH 11f	"	"	"
AH 12a	"	Clone 12 (Luasong)	"
AH 12c	"	"	"
AH 12e	"	"	"
AH 17-1	"	Clone 17 (Luasong)	"
AH 17-2	"	"	"
Aust 11c	*A. mangium*	Australia (Queensland)	1987
Aust 13c	"	"	"
Aust 14c	"	"	"
CB 756	*Macroptylium* sp.	Zimbabwe (CIAT)	Unknown
ORS 800	*A. holosericea*	Senegal (ORSTOM)	"
ORS 170	*A. senegal*	"	"
Lu 4	*A.mangium*	Luasong	1994
Lu 7	"	"	"
Nlu 2	"	Luasong (nursery)	"
Nlu 3	"	"	"
Nlu 5	"	"	"
Was 1	"	Taliwas	"
Was 2	"	"	"
Was 3	"	"	"
Was 9	"	"	"
Tel 1	"	Telupid	"
Tel 2	"	"	"
Tel 5	"	"	"
Tel 6	"	"	"
Tel 8	"	"	"
Tel 10	"	"	"
But 1	"	Bukit Timah, Singapore	"
But 3	"	"	"
But 5	"	"	"
Aa 15	*A. auriculiformis*	Sabah	"
Aa 16	"	"	"

Updated list of the rhizobium strains available from the PBL in June 2000 (continuation)

Strain no.	Host species	Origin	Date of isolation
Am 1d	*A. mangium*	Brumas, (SSSB)	October 1999
Am 2c	"	"	"
Am 3b	"	"	"
Am 3d	"	"	"
Aa 1a	*A. auriculiformis*	"	"
Aa 1d	"	"	"
Aa 2a	"	"	"
Aa 2c	"	"	"
Aa 3c	"	"	"
Ah 1a	*A. mangium x auriculiformis* hybrid	"	"
Ah 4a	"	"	"
Ah 5d	"	"	"
Ah 6b	"	"	"
Ac 2a	*A. crassicarpa*	"	"
Ac 5c	"	"	"
Au 1c	*A. aulacocarpa*	"	"
Au 2b	"	"	"
Au 2c	"	"	"
Au 3a	"	"	"
Af 1b	*Albizzia falcataria*	"	"
Af 1b	"	"	"
Af 1c	"	"	"
Af 2	"	"	"
Af 3a	"	"	"
Am 5-1	*A. mangium*	Luasong (clone no.5,	February 1998
Am 5-2	"	PNG seed orchard)	"
Am 5-3	"	"	"
Am 5-4	"	"	"
Am 5-5	"	"	"
Am 5-6	"	"	"
Am 5-7	"	"	"

PLANT IMPROVEMENT & SEED PRODUCTION PROJECT

ICSB - CIRAD-Forêt

HANDING OVER DOCUMENTS:

Hardware, Information and Data Transfert

June 2000

1. List of the technical hardware
2. List of the field trials (rattans and trees)
3. List of the field trial computer data files (data, maps, analysis and reports)

Tawau, the 26th of June 2000

- For ICSB

John Tay

- For CIRAD

Philippe Vigneron

David Alloysius

Roberto Bacilieri

1. List of the technical hardware handed over to ICSB from CIRAD-Foret

Item	Model	Quantity	Contributor	Status
Altimeter		1	CIRAD-Forêt	Out of order
Binoculars		4	ICSB	Working
Camera (flash,35-135mm lens)	Nikon F601	1	CIRAD-Forêt	Working
Camera (flash,35-70mm lens)	Canon EOS630	1	ICSB	Working
Cement mixer		1	ICSB	Working
Chainsaw	Stihl 023	1	ICSB	Out of order
Chainsaw	Stihl 038	2	CIRAD-Forêt	Working
Chainsaw	Stihl 038	2	ICSB	Working
Chiller	2-door	1	CIRAD-Forêt	Working
Clinometer/heightmeter	Suunto PM5-360PC	2	ICSB	Working
Compass	Suunto MC1/360D	4	ICSB	Working
Compass	Meridian	1	CIRAD-Forêt	Working
Computer 486	Acer	1	ICSB	Working
Computer Notebook (+modem)	Acer	1	CIRAD-Forêt	Working
Computer Notebook	Acer	1	ICSB	Working
Computer Pentium	Acer	1	ICSB	Working
Computer Pentium	Acer	1	CIRAD-Forêt	Working
Cool room	HC 50E5	1	ICSB	Working
Data logger	Licor	2	CIRAD-Forêt	Working
Data logger	Husky 2	1	CIRAD-Forêt	Working
Electric fence		1	ICSB	Working
Electric oven	Jouan EU170	1	CIRAD-Forêt	Working
Electronic balance	Metller PM4600	1	CIRAD-Forêt	Working
Fish-eye lens	Nikkor	1	CIRAD-Forêt	Working
Generator	Yanmar L100AE-D	1	CIRAD-Forêt	Working
GPS	Trimble	1	CIRAD-Forêt	Working
Hypsometer		1	CIRAD-Forêt	Working
Illuminance meter	Topcon IM-3	1	CIRAD-Forêt	Working
Increment auger	Haglof	1	CIRAD-Forêt	Working
Labelling machine	DYMO 1011	1	ICSB	Working
Lighted microscope 10X	National FF-393	1	ICSB	Working
Misting system		1	ICSB	Working
Photocopy machine	Canao NP1010	1	ICSB	Working
Printer	HP Laser 5L	1	ICSB	Working
Printer	HP 340	1	CIRAD-Foret	Working
Printer	EPSON LQ1050	1	CIRAD-Forêt	Working
Quantum sensors	Licor	10	CIRAD-Forêt	Working
Refrigerator	4-door	1	ICSB	Out of order
Soil auger		1	CIRAD-Forêt	Working
Telescopic measuring pole		2	CIRAD-Forêt	Working
UPS	PK	2	ICSB	Working
UPS	PK	2	CIRAD-Forêt	Working
Land Cruiser ST2881D	Toyota Mach II	1	CIRAD-Forêt	Working

2. List of field experiment established for trees by PSIP (CIRAD-Foret / ICSB)

Species	Objective	Type of trial	Origin	Type of plants	Location	Area (ha)	Date planted
Tectona grandis	Analysis of heritability and selection gains for growth and form characters	Provenance/Progeny trial Randomised Complete Blocks	12 provenances + 32 plus tree families	seedlings	Taliwas / KM18	5	Mar-97
Tectona grandis	Analysis of heritability and selection gain for growth and form caracters	Provenance/progeny trial Partially equilibrated incomplete block design	12 provenances + 32 plus tree families	seedlings + one "in vitro provenance"	Luasong	4.5	May-97
Tectona grandis	Silviculture : Study of competition among trees through differential thinning regimes	Randomised Complete Blocks (7 reps)	Conventional (balanced mix of 3 provenances)	seedlings	Luasong	7	Aug-Nov 1997
Tectona grandis	Comparison of propagation methods: microcuttings (in vitro), macrocuttings (nursery), seedlings	Clone trial Randomised Complete Blocks	6 clones plus seedlings from the same mother trees	in vitro cuttings, conventional cuttings, seedlings	Taliwas / km 18	2.2	Sep-98
Tectona grandis	Verification of conformity of in vitro introductions	"origin" trial Randomised Complete Blocks	4 clones + 4 in vitro introduced provenances	microcuttings	Taliwas / km 13	2	Sep-97
Tectona grandis	Survey of growth over time	Demoplots established by various companies but surveyed by us	Various	seedlings or cuttings	Forestry Dept., Luasong, Taliwas	3	1950-1996
Acacia mangium (PNG)	Analysis of heritability and selection gain for growth and form caracters Seed production	Multilocal Progeny trial (first generation) Randomised Complete Blocks	52 families from Papua New Guinea	seedlings	Luasong	3	Feb-90
A. mangium (QSL)	Analysis of heritability and selection gain for growth and form caracters Seed production	Multilocal Progeny trial (first generation) Randomised Complete Blocks	46 families from Queensland	seedlings	Luasong	3	Apr-90
A. mangium (PNG)	Second generation improved seed orchard	Progeny trial (second generation) Randomised Complete Blocks	Best 20 trees from best 20 families from best provenance (PNG)	seedlings	Luasong	1	Jul-97
A. crassicarpa	Analysis of heritability and selection gain for growth and form caracters Seed production	Multilocal Progeny trial (first generation) Randomised Complete Blocks	56 families from Papua New Guinea	seedlings	Luasong	5	Apr-90
A. auriculiformis	Analysis of heritability and selection gain for growth and form caracters Seed production	Progeny trial (first generation) Randomised Complete Blocks	38 families from Papua New Guinea and Australia	seedlings	Luasong	3	Apr-90
A. aulococarpa	Analysis of heritability and selection gain for growth and form caracters Seed production	Progeny trial (first generation) Randomised Complete Blocks	43 families from Papua New Guinea and Australia	seedlings	Luasong	3	Nov-91

2. List of field experiment established for trees by PSIP (CIRAD-Foret / ICSB) *(continued)*

Octomeles sumatrana	Silviculture: Combined fertiliser + thinning regime trial	Randomised Complete Blocks	Local	seedlings	Taliwas / KM 13	5	Apr-96
Gmelina arborea	Selection / seed - clone production	Progeny trial (30 families) Randomised Complete Blocks	Sabah Softwood clonal seed orchard	seedlings	Luasong	5	Apr-91
Khaya ivorensis	Selection / seed production	Provenance trial (4 provs) Randomised Complete Blocks	Ivory Coast and Malaysia	seedlings	Luasong	0.5	Sep-90
Khaya ivorensis	Selection / seed production	Progeny trial (12 families) Balanced lattice	Ivory Coast	seedlings	Luasong	1.2	Jun-91
Khaya ivorensis	Selection / seed production	Progeny trial (12 families) Balanced lattice	Ivory Coast	seedlings	Luasong	0.5	Jul-91
Xylia xylocarpa	Species selection (line planting)	Demoplot	Thailand	seedlings	Luasong	0.4	Sep-90
X. xylocarpa	Species selection (open planting)	Demoplot	Thailand	seedlings	Luasong	0.3	Sep-90
Eucalyptus pellita	Selection / seed production	Progeny trial (33 families) Randomised Complete Blocks	Australia	seedlings	Luasong	8	Nov-92
Eucalyptus pellita	Selection / mass propagation of clones	Clonal trial (21 clones) Randomised Complete Blocks	Australia / selected in Luasong	cuttings	Taliwas / KM18	0.2	Dec-98
Eucalyptus pellita	Selection / mass propagation of clones	Clonal trial (21 clones) Randomised Complete Blocks	Australia / selected in Luasong	cuttings	Luasong	0.3	Feb-99
15 other tree species	Species trial	Demo line and open plantings)	Various	seedlings / cuttings	Luasong and Ta	25	1990-1998
					TOTAL	**88.1**	

2. List of field experiments established for rattans by PISP (CIRAD-Foret / ICSB)

	Description	***Quantity***	***N. of hectares***
C. manan	Progeny trials	10	3.69
	Ressource stands	6	1.80
	Seed stand	1	16.00
	Multi-stem collection	1	0.30
		total	21.79
C. subinermis	Progeny trials	10	4.36
	Provenance trials	1	0.63
	Ressource stands	5	1.36
	Yield plots	13	0.50
	Big / small polybags trial	1	0.80
	Fertiliser trial	1	0.80
	Shade adjustment trial	2	6.00
		total	14.45
C. caesius	Progeny trials	9	7.34
	Provenance trials	1	0.30
	Ressource stands	8	1.23
	Yield plots	19	0.60
	Size at plantation trial	1	0.60
	Big / small polybags trial	1	0.80
		total	7.94
C trachycoleus	Yield plots	12	0.50
		total	0.50
C ornatus	Progeny trials	1	0.23
	Ressource stands	1	0.06
		total	0.29
C. optimus	Ressource stands	1	0.03
		total	0.03
		TOTAL	***45.00***

3. List of the field trials computer data files (data, maps, analysis and reports) handed over to PISP (hard-disk of the Acer NoteBook) :

Directories :

\CIRAD to PISP

\Acacia

A. mangium second generation seed orchard
A. crassicarpa Brumas (Ac20a)
A. crassicarpa Brumas + Luasong : multisite analysis
A crassicarpa Luasong
A. hybrid clonal test Brumas (18c)
A. hybrids- Cutting and potting experiments
A. mangium + hybrid clonal trial – Taliwas
A. mangium and crassicarpa coppicing experiments
A. mangium clone n. 5 – seedlings vs. cuttings
A. mangium Heart rot analysis
A. mangium SSO Tiagau
Nursery experiments
Power Point Presentation (Meeting IUFRO-UPLB Philippines)

\Mission Reports

\Octomeles

Demoplot
Thinning trial

\Rattans

Genetics

C. caesius
C. irit
C. manan
C. subinermis
Examples JM Bouvet

Inbar Training Course – Papers

Silviculture

C. subinermis – Light, environment and growth
C. subinermis – Shade adjustments

Nursery

Fertiliser trials – several species
Germination study
Study of effect of light in controlled conditions
Study of patterns of growth on 50 plants, several species

\Rattans

- Silviculture
  - Plantation
  - Fertilizer trial
    - Polybag size – C. caesius
    - Polybag size, C. subinermis
    - Size of the plant at plantation – C. caesius
  - Published papers
  - Study of the yield plots (1991-1998)
- STD3 Final Reports

\Soil Analysis

\Teak

- Article teak silviculture
- CCT Plots
- Demoplot in vitro Perlis
- Feasability study
- Flowering
- Germination
- In vitro collection
- Origin trial (Taliwas)
- Poster Chiang Mai Teaknet 2000
- Protocols for Teak DNA extraction
- Provenance-progeny trials
  - Luasong
  - Taliwas
- Rooted vs. non-rooted in vitro plantlets trial
- TG4 – comparison of propagation methods (Taliwas)

\Tree inventory