



EMPRESA BRASILEIRA DE PESQUISA AGROPECUÁRIA - EMBRAPA

REPORT ON THE IRRDB SENIOR PLANT BREEDERS MEETING ON
THE COLLECTION AND CONSERVATION OF HEVEA GERMPLASM
FROM SOUTH AMERICA

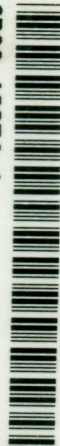
5-8 AUGUST, KUALA LUMPUR



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REPORT ON THE IRRDB SENIOR PLANT BREEDERS
MEETING ON THE COLLECTION AND CONSERVATION
OF HEVEA GERMPLASM FROM SOUTH AMERICA
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The above meeting was held in the RRIM Board room and was attended by Senior Plant Breeders from Brazil, Indonesia, Thailand, China, Nigeria, Ivory Coast, India and Malaysia. The secretaries of the IRRDB and MRRDB were in attendance. Dr E.K. Ng, the Deputy Director (Research) of RRIM was unanimously elected chairman of the meeting.

Current Status of Hevea Materials Collected from Brazil

The meeting was told that the expedition carried out with the cooperation of the Brazilian government was completed in March 1981 and the seeds collected have been distributed to CNPSD (50%), RRIM (37.5%) and IRCA (12.5%). Budwood of 162 clones have been multiplied in the primary nursery in Manaus.

The viability of the seeds collected were above average and the IRRDB germplasm centre in Malaysia has raised about 14,600 seedlings in the nursery while the IRRDB germplasm centre in Ivory Coast has 3,300 seedlings in the nursery. As a precautionary measure it was recommended that insurance budding of all the genotypes (seedlings) will be carried out prior to transplanting from the nursery to the field. The RRIM agreed to establish 5 buddings of each genotype and IRCA taking into consideration the smaller population and possible loss of plants due to root disease will establish 5 x 2 buddings of each genotype. The planting distance for the buddings in the nursery will be 1 m x 1 m.

It was agreed that the duration of the seedling nursery before transplanting will be 18 months for RRI Malaysia and 24 months for IRCA Ivory Coast to keep in line with the existing practices in the two countries. The transplanting is to be carried out as seedling stumps pollarded at a recommended height of 2 m depending on the availability of brown bark. The

planting distance in the field will be 4.4 m x 4.4 m.

Clonal material. The Intermediate Quarantine Nursery in Guadeloupe will be ready to receive 1 m of each of 162 clones from the Primary Nursery in Manaus for multiplication during February 1982. It was suggested that the budwood be sent in 5 different consignments. Additional shipment of budwood to Guadeloupe is planned for April 1982. For the later shipment, 4 m of budwood from each 162 clones are to be despatched in 20 batches. The details of this arrangement will be worked out between IRCA and CNPSD. It is expected that budwood from Guadeloupe will be ready for distribution sometime in 1983/84.

Functions of the IRRDB Germplasm Centres

The meeting agreed that the following should be the functions of the two germplasm centres:

1. Conservation and Maintenance
2. Evaluation and Utilisation
3. Documentation and Dissemination

Conservation and maintenance. These functions have been dealt with above.

Evaluation and utilisation. The following observations and measurements will be carried out at both centres:

I. Nursery

- (a) Girth measurements. The RRIM will carry out the above at 12 months at a height of 20 cm. As for IRCA two measurements will be taken at 12 and 24 months at a height of 1 m.

The two centres may, as a crosscheck, take readings of a sample population at the above mentioned periods and heights.

- (b) Height of seedlings at 12 months. IRCA will also take readings at 6 months.
- (c) General disease observations.

In addition to the above, IRCA will record growth units (whorls), carry out test tapping at 24 months and take leaf size measurements on selected plants.

II. Field

The meeting agreed that the field planting will be carried out at a spacing of 4.4 m x 4.4 m and the tapping system will be S/2 d/3 67%.

- (a) Girth measurements. Annual girth measurements will be carried out at a height of 60 cm (RRIM) and 1 m (IRCA) for a period of 6 years.
- (b) Opening for tapping. The trees will be opened for tapping when:
 - (i) 70% of the trees have reached a girth of 50 cm at a height of 1 m for IRCA.
 - (ii) 70% of the trees have reached a girth of 45 cm at a height of 60 cm for RRIM.
- (c) Yield expression. Irrespective of method of recording practised by the two centres, the yield will be expressed as kg/tree/year. Yield recording will be for a period of 2 years. For the second year tapping all the trees will be stimulated with ethephon at 2.5% concentration.
- (d) Screening against SALB. It was agreed that better selections of the provenances that show some degree of resistance to SALB based on observations made in the Primary Nursery at Manaus will be sent from the two centres to the SUDHEVEA/RRIM SALB Unit in Brazil for screening.



Documentation and dissemination. The meeting realised that numerous characters could be documented (e.g. 150 characters are documented by EMBRAPA, Brazil), but for practical reasons agreed that the two centres should only undertake to document the following:

1. Growth
2. Production
3. Resistance to diseases

The available information will then be sent to the Secretary, IRRDB who will be responsible for the dissemination to participating member institute.

Distribution of Budwood from Guadeloupe

The meeting took note of the concern expressed by several delegates that any delay during shipment (e.g. caused by missed airline connection) of budwood from Guadeloupe to the recipient member institute could prove to be costly and might even result in recipient countries receiving dead budwood. It was therefore recommended that a dummy run exercise for budwood to be despatched from Guadeloupe to IRRDB member countries through the intermediate quarantine station in the United Kingdom via Paris.

The outcome of the dummy run, which should be initiated soonest possible, would determine the method of distribution for the budwood from Guadeloupe to IRRDB member countries. In the event of an unfavourable outcome, the meeting recommended that budwood from the intermediate quarantine centre at Guadeloupe be distributed to the two germplasm centres for multiplication. Arrangements could be made for sufficient budwood to be despatched to the two IRRDB germplasm centres to enable participating member institutes to collect specified quantities at the nearest centre. However, such an arrangement must be initiated by the participating institutes who will bear the



expenses involved.

If any participating member institute wishes to obtain the budwood, at their own expense, directly from Guadeloupe after the plants in the centre have been declared free of SALB prior to harvest of budwood by the IRRDB Pathologist authorised with such responsibility, and the despatch of the budwood to be carried out in strict adherence of the recommended quarantine procedures then such an arrangement should be carried out only after consultation with IRCA.

Despatch of Budwood from the Germplasm Centres

Participating member institutes can request for budwood from the two germplasm centres and will bear expenses relating to harvesting, packaging and freight.

Future Expeditions

The general consensus is that there is a need for future expeditions. These should concentrate on H. brasiliensis and its variants but not forgetting other species also. It was proposed that the next expedition be carried out in Brazil during February - April 1982 provided that all necessary clearance has been obtained from the authorities in Brazil. The following sites have been identified in Brazil for the above collection:

Cruzeiro do Sul in Acre,
Jaciparana in Rondonia and if possible
Barcelos and São Gabriel das Cachoeiras
in Amazonas.

This would be followed by another expedition in 1983 to Bolivia, Peru, Columbia and Venezuela. The meeting agreed that IRRDB should re-establish contacts with the relevant authorities in these countries as soon as possible. If the proposed expedition in Brazil cannot be carried out during 1982 it will be postponed to 1984.



Estimates

The estimates for the establishment and maintenance of the primary nursery in Manaus, the intermediate quarantine nursery in Guadeloupe, and the IRRDB germplasm centres in Malaysia and Ivory Coast are given below. A summary of year-to-year expenditure in the two centres is given in Appendix I. The detailed expenditures for the germplasm centres in Malaysia and Ivory Coast are given in Appendix II and Appendices III and IV respectively. An estimate for the proposed dummy run exercise for budwood from Guadeloupe to IRRDB member institutes is also given below.

	(US\$)
1. Dummy Run Exercise for Budwood	10,000.00
2. Packaging and Freight	20,000.00
To meet costs of transporting budwood from Manaus to Guadeloupe and from Guadeloupe to the two germplasm centres.	
3. Primary Nursery in Manaus	7,000.00
Establishment and maintenance	
4. Intermediate Quarantine Nursery, Guadeloupe	25,000.00
5. Germplasm Centre in Malaysia (Appendix II)	
Establishment and maintenance of seedling nursery borne by MRRDB	
Gene Pool Garden	
Establishment and maintenance (until the 6th year)	
	1,000,000.00
6. Germplasm Centre in Ivory Coast	
(Appendices III & IV)	
Establishment and maintenance of	
Seedling nursery	64,114.00
Budwood garden	5,532.00
Gene pool garden	189,893.00
(until the 7th yr)	
	259,539.00
Total	1,321,539.00

APPENDIX 1

SUMMARY OF ANNUAL EXPENDITURE (US\$'000) IN THE TWO GERMPLASM CENTRES

	Item	Malaysia	Ivory Coast	Total for both centres	Annual total
1981	Seedling nursery	Borne by MRRDB	44.3	44.3	
	Source bush	-	2.4	2.4	46.7
1982	Seedling nursery	Borne by MRRDB	11.7	11.7	
	Source bush	53.6	0.4	54.0	
	Gene pool garden	81.9		81.9	147.6 *
					(162.4)
1983	Seedling nursery	-	5.7	5.7	
	Source bush	18.2	0.7	18.9	
	Gene pool garden	71.5	29.0	100.5	125.1
					(151.4)
1984	Source bush	10.4	0.3	10.7	
	Gene pool garden	67.1	20.1	87.2	97.9
					(130.3)
1985	Source bush	10.4	0.2	10.6	
	Gene pool garden	96.0	19.2	105.2	115.8
					(169.5)
1986	Source bush	10.4	0.2	10.6	
	Gene pool garden	113.0	19.0	132.0	142.6
					(229.7)
1987	Source bush	10.4	0.2	10.6	
	Gene pool garden	75.1	18.7	93.8	104.4
					(185.0)
1988	Source bush	-	0.2	0.2	
	Gene pool garden	-	18.6	18.6	18.8
					(36.6)

* Figures in parenthesis have been compounded at 10% p.a.

APPENDIX II

SUMMARY OF EXPENDITURE (M\$'000)* FOR THE PROPOSED GERMPLASM CENTRE IN THE
RUBBER RESEARCH INSTITUTE EXPERIMENT STATION, SUNGET BULOH, MALAYSIA

Item	Expenditure by year of planting						Total
	1982	1983	1984	1985	1986	1987	
FIELD ESTABLISHMENT							
a. Establishment cost	43.7						
b. Planting	41.5						
c. Field maintenance cost	-	46.2	33.1	26.1	53.2	25.4	
INSURANCE SOURCE BUSH NURSERY							
a. Establishment cost	128.7						
b. Nursery maintenance	-	43.7	25.0	25.0	25.0	25.0	
STAFF SALARIES	71.3	73.8	76.3	98.3	101.5	104.8	
GIRTH MEASUREMENT		1.5	1.5	1.5	1.5		
TAPPING COST				36.0	36.0		
STIMULATION	-	-	-	-	10.5	-	
WEIGHING AND RECORDING INCLUSIVE OF WIRES AND LABELS	-	-	-	-	14.4	14.4	
LABOUR FOR COLLECTION AND WEIGHING	-	-	-	4.0	4.0		
OTHER ADMINISTRATIVE EXPENSES AND OVERHEADS	10.0	20.0	20.0	20.0	20.0	20.0	
PAINT AND LABOUR	30.0	30.0	30.0	30.0	30.0	30.0	
Total	325.2	215.2	185.9	255.3	296.1	205.2	1,482.9
10% compounding	357.7	260.4	247.4	373.8	476.9	363.5	2,079.7

* Malaysian ringgit

US\$2.40 = 1 Malaysian ringgit.

APPENDIX III

SUMMARY OF EXPENDITURE (X'000 F CFA) FOR THE PROPOSED GERMPLASM CENTRE IN IVORY COAST

Item	Annual Expenditure								Effective CFA	US\$
	1981	1982	1983	1984	1985	1986	1987	1988		
Seedling nursery	12,415	3,274	1,600						17,289	64,114
Budwood garden	680	100	202	80	60	60	60	60	1,302	5,532
Gene pool garden	-	-	8,115	5,622	5,388	5,314	5,235	5,207	34,881	189,893
Total ('000 F CFA)	13,095	3,374	9,916	5,702	5,448	5,374	5,295	5,267	53,472	
Total (effective)	13,095	3,711	11,998	7,589	7,976	8,655	9,380	10,264	72,671	
US \$	46,768	13,254	42,850	27,104	28,486	30,911	33,500	36,657		US\$259,539

APPENDIX IV

DETAILED EXPENDITURE FOR THE GENE POOL GARDEN (X'000 F CFA) IN IVORY COAST

	1982	1983	1984	1985	1986	1987	1988	Total
CULTURE								
- Land preparation		2558						
- Holing		63,5						
- Planting		54,9						
- Manuring		58,8	125,2	78,6	41,0	41,0	41,0	
- Maintenance		349,8	467,4	279,9	243,2	164,1	136,0	
Total		3085	597,6	358,5	284,2	205,1	177,0	4702,4
WAGES								
- Field Supervisor		600	600	600	600	600	600	
- Watchman		1100	1100	1100	1100	1100	1100	
- Clerk		1200	1200	1200	1200	1200	1200	
Total		2900	2900	2900	2900	2900	2900	17400,0
RUNNING COST								
- Car		1800	1800	1800	1800	1800	1800	
- Motor cycle		80	80	80	80	80	80	
- Office		250	250	250	250	250	250	
Total		2130	2130	2130	2130	2130	2130	12780
Total		8115	5622	5388	5314	5235	5207	34882

LIST OF PARTICIPANTS

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Dr Ismail Hashim	- do -
Encik Khoo Swee Keng	- do -
Dr Leong Sook Kwai	- do -
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Dr Mohd Nordin bin Haji Wan Daud	- do -
Dr Ong Seng Huat	- do -
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Dr Zahar bin Samsudin	- do -
Dr Mohd Nor bin Abdul Ghani	- do -
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