Improved Genetic Planting Material (IGPM): availability and use in Jambi province

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Introduction

The aim of this study was to investigate the availability and use of rubber clones/ Improved Genetic Planting Material (IGPM) in Jambi, which is one of Indonesia's main rubber producing provinces. The total area of Jambi's rubber fields is about 520,450 ha, which consists of 505,851 ha of smallholder rubber, 6,725 ha of government plantations, and 7,874 ha of private plantations (1996 Annual Report of the Plantations Department Level I Jambi Province (Laporan Tahunan Dinas Perkebunan Dati I Propinsi Jambi)). However, this situation may change in 2001 as there are many new private plantations planned, especially oil palm plantations. This study was carried out in Jambi's three main rubber producing districts: Sarolangun Bangko (about 215,618 ha), Bungo Tebo (about 154,339 ha), and Batang Hari (about 147,835 ha) (1996 data). Two other districts in Jambi, namely Tanjung Jabung and Kerinci, also produce rubber, but on a much smaller scale and, therefore, were not included in this study. The study was conducted in December 1995 and for two weeks in May 1997. The total survey time was about six weeks

Survey Methods

The study was a descriptive survey, collecting both primary and secondary data. Primary data was collected through inspection of government and private rubber nurseries and open interviews with their staff. Secondary data was taken from the Plantations Department Level I in Jambi (Dinas Perkebunan Dati. I) as well as the Plantations Department in every district, and the Jambi Tree Crops Smallholder Development Project (TCSDP). Due to lack of time, only secondary data was collected in Sarolangun Bangko.

Outputs

IGPM availability depends on the distribution of clone nurseries and on the type of IGPM produced. The production of clones in Jambi province is as follows:

- Government clone nursery projects

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- Specific Project: A private company in cooperation with the Jambi Chapter of the Indonesian Association of Rubber Producers (GAPKINDO) and the Center for Policy and Implementation Studies (CPIS)
- Farmers' clone nurseries (private nursery)

Government clone nursery projects

The dispersal of clones in Jambi first began with a government project in 1986 called the Tree Crops Smallholder Development Project (TCSDP). This project established budwood gardens and rootstock nurseries in different districts depending on the potential for rubber plantation in each district. The development of these gardens can be seen in Tables 1 and 2.

Table 1. TCSDP budwood gardens in Jambi province

District	UPP*	Area (ha)	Number of trees per clone								Year planted
			BPM 1	BPM 24	GT 1	PR 255	PR 261	PR 300	PR 303	PR 228	
Batang	Ma.Bulian	-	-	-	-	-	-	-	-	-	-
Hari	Ma.Tembesi	7	7650	22400	-	-	18500	-	-	-	1991/92
Bungo	Ma.Tebo	6	-	-	45644	-	-	-	-	-	1987/88
Tebo	P.Temiang	5	8124	11386	-	-	11707	-	-	-	1987/88
Saro-	Sarolangun	4	-	7500	550	-	9478	-	765	-	1991/92
Langun	Pauh	4	653	9682	-	-	3665	-	-	-	1991/92
Bangko	Singkut	5	-	-	32258	1419	1412	1428	1321	1422	1986/87
	Total	31	16427	50968	78452	1419	44762	1428	2086	1422	

Source: (**UPP NEED ENGLISH HERE** Report TCSDP Project, Jambi, 1996 (Laporan UPP, Bagian Proyek TCSDP Jambi 1996)

*** UPP = NEED ENGLISH HERE**

Table 2. TCSDP rootstock nurseries in Jambi province

Districts	UPP*	Area (ha)	Year Planted	Comment
Batang Hari	Muara Bulian	15	1991/92	All the GT 1 seeds for each UPP
	Muara Tembesi	5	1991/92	are bought from Sembawa area
Bungo Tebo	Muara Tebo	15	1987/88	
	Pulau Temiang	15	1987/88	
Sarolangun Bangko	Sarolangun	8	1991/92	
	Pauh	7	1991/92	

Source: Tree Crops Smallholder Development Project (TCSDP) 1992/1993 Annual Report

The first budwood garden (Table 1) and rootstock nursery was in Singkut, for which all the stumps and GT 1 seeds were bought from the Sembawa area. For the other **UPP (UPP = Project Unit)** nurseries, stumps were bought from Sungai Putih Medan, especially BPM-1 and BPM-24, and the other stumps were taken from UPP Singkut.

There is no information about annual grafted stump production. However, up to 1996, TCSDP succeeded in establishing about 20,787 ha of clonal rubber plantations with 20,360 smallholder participants in Jambi.

In addition to TCSDP, other programs also focused on budwood production through the establishment of budwood gardens for local communities. Details of several government projects can be seen in Table 3.

Table 3. **Dinas Perkebunan nursery projects in Jambi province**

Project name	Area (ha)	Year of Implementation
PSP2	6.00	1994/1995
APBD Tk.I	1.00	1991/1992
APBD Tk.II	0.25	1991/1992
P2KP2	0.20	1990/1991
INPRES-BANDES	49.21	1992/1993

Source: Jambi Plantation Department 1996 Annual Report (Laporan Tahunan Dinas Perkebunan, Jambi, 1996)

There is no information available on annual grafted stump production nor how many hectares of clonal rubber plantations were developed through these projects. At this time, the only available information on Bungo Tebo is that there are 2,179 ha of smallholder clonal rubber plantations through the INPRES-BANDES Project, and in Batang Hari 2,537 ha from the same project. From the INPRES-BANDES program, only a few budwood gardens have been efficiently used by local farmers. A further survey is necessary to explain the very low level of adoption by farmers. Subsequently, a very small amount of improved planting material has been produced by farmers. This shows that the presence of a budwood garden is necessary, but not sufficient in itself to boost IGPM production.

A specific project: The GAPKINDO/CPIS nursery program

In 1993, GAPKINDO and the Center for Policy and Implementation Studies (CPIS) collaborated with PT. Brahma Bina Bakti (a private company) on the Dispersed Rubber Development Pilot Project. Their activity focused on the development of budwood garden and rootstock nurseries for extension of smallholder plantations.

In the first year of their cooperation, about 1 ha of budwood garden and rootstock nursery were established at PT. Brahma Bina Bakti Plantation (53 km from Jambi on the road to Merlung). They bought the stumps and GT-1 seeds from PT.Virco in Padang Sidempuan. Stumps were checked and produced by PT. Virco from material originally coming from Sungai Putih Research Station.

The condition of the budwood garden and rootstock nursery can be seen in Tables 4 and 5.

Table 4. **Condition of budwood garden**

Clone	Number of plants on August 28, 1993	Number of plants Living on August 23, 1994	Percentage of survival (%)
RRIC 100	2,273	2,135	93.9
PR 261	9,590	2,785	29.0
BPM 1	5,126	2,535	49.5
BPM 24	4,716	2,501	53.0

Source: GAPKINDO's August 1994 Nursery Report (Laporan peninjauan bibit, GAPKINDO, August 1994)

Table 5. **Condition of rootstock nursery**

Block code	Number of plants on January 23,1994	Number of plants living on August 23, 1994	Percentage of survival (%)
A.23	22,576	16,451	72.9
A.24	24,904	20,158	80.9
A.25	23,998	15,081	62.8
A.26	22,576	15,166	67.2
Total	94,054	66,856	71.0

Source: GAPKINDO's August 1994 Nursery Report (Laporan peninjauan bibit, GAPKINDO, August 1994)

In addition to the location at PT. Brahma Bina Bakti, the project also built rootstock nurseries with farmers as a satellite project that can be seen in Table 6.

Table 6. **Condition of farmers' rootstock nurseries**

Block Code	Farmer's name	No of plants in January 1994	No of plants living on August 23, 1994	Percentage of Survival (%)
I	M.Syukri	25,000	18,548	74.0
II	Syaroni	25,000	18,547	74.0
III	Abdul Mutalib	25,000	18,547	74.0
Total		75,000	55,642	74.0

Source: GAPKINDO's August 1994 Nursery Report (Laporan peninjauan bibit, GAPKINDO, August 1994)

The data in Tables 4-6 above are derived from GAPKINDO's August 1994 Nursery Report (Laporan Peninjauan Kebun Bibit). From these tables, it can be seen that there is a very low percentage of survival in the budwood garden, but there is no information available about the reasons why. The three tables also show that there is a big potential for producing a high number of grafted stumps and eventually establishing a large number of clonal rubber smallholder plantations. Unfortunately, no more reports or follow up studies have been produced by GAPKINDO nor the other two partners in this project.

Informal reports indicate that the rootstocks were not grafted because they were used by farmers for seedling rubber plantations. The budwood garden was thinned to become a productive rubber plantation.

Although the IGPM production system established by GAPKINDO/CPIS and PT. Brahma Bina Bakti was originally well planned, this experience shows that IGPM production and dissemination at the farmers' level is not an easy task and achievement of such objectives are highly dependent on suitable training and efficient follow up of activities. Small, private nurseries and self-production of planting material by farmers (i.e., well managed, community village budwood gardens with relevant training) seem to be better suited to the objective of IGPM dissemination.

Farmers' clone nurseries

IGPM was first dispersed through the government clonal rubber nurseries to the surrounding farmers. This activity has largely contributed to the availability of clonal rubber in areas where budwood gardens were established in Jambi. To date, farmers still obtain the budwood from unmanaged or abandoned government nurseries. Farmers make grafted stumps, partly for their own plantations and partly for sale. The conditions of farmers' nurseries are shown in Tables 7 and 8.

Table 7. **Farmers' clone nursery production in Bungo Tebo district**

Year	Number of farmers selling		Average production of		Total production of		Price (Rp) Per	
	stumps	polybags	stumps	polybags	Stumps	Polybags	stumps	polybags
1991	4	2	10,500	3000	42,000	6,000	175	650
1992	4	2	10,500	3000	42,000	6,000	175	650
1993	4	2	10,500	3000	42,000	6,000	175	650
1994	5	4	10,800	3000	54,000	12,000	200	700
1995	7	5	11,000	3,800	77,000	19,000	250	750
1996	7	6	12,430	3,830	87,000	23,000	250	750

Source: Results from interviews, Smallholder Rubber Agroforestry Project (SRAP), May 1996

Table 8. **Farmers' clone nursery production in Batang Hari district**

Year	Number of farmers selling		Average production of		Total production of		Price (Rp) Per	
	stumps	polybags	Stumps	polybags	Stumps	polybags	stumps	polybags
1988	2	-	7,750	-	15,500	-	125	-
1989	2	-	10,250	-	20,500	-	125	-
1990	4	1	14,375	2,000	57,500	2,000	100	400
1991	4	1	27,250	2,000	109,000	2,000	125	450
1992	6	1	31,665	2,000	190,000	2,000	130	500
1993	6	4	41,666	13,750	250,000	55,000	150	550
1994	7	7	47,857	31,071	335,000	217,500	150	600
1995	8	7	32,750	18,500	262,000	129,500	175	650
1996	8	8	43,750	11,562	350,000	92,500	200	700

Source: Results from interviews, Smallholder Rubber Agroforestry Project (SRAP), May 1996

From Tables 7 and 8 it can be seen that the greatest production from farmers nurseries is grafted stumps rather than polybags. This might be because the price of stumps is lower than that of polybags (see Table 7). The types of clones available are similar to that of the government nurseries. Clones in Bungo Tebo are BPM-1, BPM-24, and GT-1. In Batang Hari they are GT-1, PR-261, and PR-300.

However, farmers sold stumps as a mixture of clones. The farmers are not sensitive to clonal purity, reflecting the lack of information both from producers and users (farmers).

Conclusions

1. IGPM availability and use in Jambi province first began through government projects such as TCSDP, PSP2, P2KP2, and INPRES-BANDES, and then was followed by the establishment of individual private nurseries. Improvement of farmers' capabilities is a priority, especially for establishment and management of budwood gardens. Nowadays the farmers prepare rootstock nurseries by collecting budwood from existing (generally abandoned) budwood gardens.

2. Farmers might have access to budwood gardens, especially community budwood gardens established by the BANDES programme. However, lack of training, poor management, lack of relevant technical information and social coherence of communities are currently the main constraints faced by farmers that limit their potential to produce IGPM. Although other types of planting material might be available for rubber, emphasis is put on clones. Clones are high yielding, very homogenous, and have better secondary characteristics than clonal or polyclonal seedlings.

3. Both the private nursery sector and IGPM production by farmers themselves should be developed and sustained. This raises the problem of access to good quality budwood gardens, clonal purity, and certification of IGPM, as well as correct and adapted recommendations for clone use in the province.

4. It is still necessary to complete this survey, especially with further information about government projects conducted through the Plantations Department. Obtaining information is sometimes difficult because of the bureaucracy. It is also necessary to interview the farmers who have nurseries in Sarolangun Bangko.

Bibliography

Laporan Peninjauan Bibit, GAPKINDO, August 1994 (GAPKINDO's August 1994 Nursery Report).

Laporan Tahunan Dinas Perkebunan, Jambi, 1996 (Jambi Plantation Department 1996 Annual Report).

Laporan UPP, Bagian Proyek TCSDP Jambi 1996 (Tree Crops Smallholder Development Project (TCSDP), UPP Report, Jambi 1996).

Tree Crops Smallholder Development Project (TCSDP) 1992/1993 Annual Report.