

PROMOTING TREE PLANTING BY SMALLHOLDERS AND LOCAL COMMUNITIES AS AN IMPORTANT SOURCE OF WOOD FOR THE TIMBER INDUSTRY

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Abstract

This 12th Malaysia Plan (RMK12) project seeks to encourage tree planting among smallholders and local communities as a vital source of timber for the wood industry. The initiative focuses on distributing 50,000 seedlings throughout the duration of the project to smallholders and local communities with land below 10 acres, provided they can demonstrate proof of land ownership. This initiative promotes various species, including Batai, Binuang, Laran, *Eucalyptus pellita*, *Swietenia macrophylla*, and *Terminalia copelandii*. The recommended spacing for most species is 6m x 6m, though adjustments can be made based on specific conditions. As of July 2024, a total of 38,482 seedlings have been distributed to 82 smallholders. Participants receive not only the seedlings but also consultation on forest plantation practices, with the goal of supporting forest plantation development across the state.

Keywords: smallholder, local communities, Batai, Binuang, Laran, *Eucalyptus pellita*, *Swietenia macrophylla*, *Terminalia copelandii*

INTRODUCTION

Historically, Sabah has depended on its natural forests for timber. However, in recent decades, there has been a shift toward forest plantations as a more sustainable timber source. This transition is underscored by 2023 statistics showing that forest plantations now account for 19.08% of Sabah's total log production, with 193 thousand cubic meters produced from plantations out of a total of 1.01 million cubic meters (Annual Report, 2023).

Despite the long-standing integration of timber plantations into forest reserve management, achieving a fully sustainable forest plantation system remains a significant challenge. Of the 400,000 hectares of plantable area designated by the state government for forest plantation development, only 160,000 hectares of forest plantations have been established by Sustainable Forest Management licensees (Action Plan, 2022). Furthermore, vast areas of idle land in Sabah present considerable untapped potential for productive use. In this context, the involvement of local stakeholders, including industry professionals and landowners, is crucial for advancing sustainable forest plantation development.

This paper discusses the efforts made so far to promote tree planting among smallholders and local communities in Sabah.

MATERIALS & METHODS

Smallholders were selected based on criteria related to land suitability and ownership. Priority was given to landowners interested in enhancing land productivity through timber cultivation. A field assessment was conducted for each registered participant to determine the most suitable species for the local conditions, following guidelines from the Forestry Department. Each smallholder received around 300 seedlings of fast-growing species such as *Neolamarckia cadamba* and *Terminalia copelandii*. Regular site visits and monitoring were conducted to ensure optimal tree growth and plantation sustainability.

RESULTS & DISCUSSION

Table 1: Numbers of participants by district in Sabah from 2021-2024.

District	2021	2022	2023	2024	Total
Beaufort	-	1	-	-	1
Beluran	-	-	-	2	2
Keningau	-	-	4	1	5
Kinabatangan	3	-	4	1	8
Kota Marudu	-	-	9	-	9
Kunak	-	-	1	-	1
Lahad Datu	2	-	-	-	2
Papar	-	-	-	1	1
Penampang	-	-	-	1	1
Ranau	-	1	-	1	2
Sandakan	11	8	14	1	34
Tawau	-	-	1	-	1
Tongod	-	3	3	1	7
Tuaran	-	5	-	-	5
Telupid	-	1	1	1	3
Total	16	19	37	10	82

Table 1 shows that the forest plantation program started modestly in 2021, with only 16 participants, primarily from the Sandakan district. This slow beginning can be linked to the ongoing recovery from the 2019 pandemic. Participation increased slightly to 19 in 2022 and then rose significantly to 37 in 2023, with Sandakan again having the largest number of participants. By 2024, the program had expanded to include 16 out of the 27 districts in Sabah. The high participation from Sandakan is likely due to the project management being located in this district, which facilitates more direct engagement. Furthermore, the data indicates that many participants are from the eastern coastal region, an area predominantly devoted to oil palm cultivation.

Table 2: Numbers of seedlings distributed by species from 2021 to 2024.

Species	2021	2022	2023	2024	Total
<i>Eucalyptus pellita</i>	1,260	2,860	1,270	180	5,570
<i>Falcataria mollucana</i>	1,900	450	2,062	360	4,832
<i>Khaya senegalensis</i>	-	-	300	-	300
<i>Neolamarckia cadamba</i>	3,985	5,600	8,548	2,945	21,078
<i>Octomeles sumatrana</i>	-	-	100	97	197
<i>Swietenia macrophylla</i>	-	-	1,020	385	1,405
<i>Terminalia copelandii</i>	970	1,510	950	1,670	5,100
Total	8,115	10,420	14,250	5,637	38,482

Table 2 presents the total number of seedlings distributed from 2021 to 2024, which are 8,115, 10,420, 14,250, and 5,637 seedlings, respectively. This brings the overall total to 38,482 seedlings as of August 2024. The most widely distributed species was *N. cadamba*, comprising 21,078 seedlings or 54.86% of the total distributed so far. *N. cadamba* was chosen primarily for its abundant availability, rapid growth rate, and suitability for veneer

and plywood production. Another species that received significant emphasis was *T. copelandii*, with 5,100 seedlings distributed from 2021 to 2024. This species thrives in seasonally wet areas, grows rapidly, and is versatile for a range of wood products.

Table 3: Growth performance of 6-year old fast-growing species in Gum-Gum Forest Reserve.

Species	DBH		Height		Volume
	Mean (m)	MAI (cm/year)	Mean (m)	MAI (m/year)	Per tree (m ³ /tree)
<i>Falcataria moluccana</i>	27.82	5.56	24.40	4.88	0.49
<i>Neolamarckia cadamba</i>	25.91	4.32	19.31	3.22	0.34
<i>Terminalia copelandii</i>	23.84	3.41	16.45	2.35	0.24

*Unpublished data

To effectively engage and convince smallholders to participate in tree planting initiatives, it is essential to establish a robust foundation based on growth performance data. Table 3 presents the growth rates of *F. moluccana*, *N. cadamba*, and *T. copelandii* in the Gum-Gum Forest Reserve under the 11th Malaysia Plan (RMK11) project. Both *F. moluccana* and *N. cadamba* were planted at a spacing of 6m x 6m, while *T. copelandii* was planted at a spacing of 7m x 7m.

F. moluccana demonstrated the highest growth rate, with a mean diameter at breast height (DBH) of 27.82 cm and a mean height of 24.40 m. Kisnawati (2011) reported that 4-year-old *F. moluccana* in smallholder plantations in Ciamis (West Java) had a mean DBH of 3.4-16.7 cm and a mean height of 3.9-19.6 m. *N. cadamba* recorded a mean DBH of 25.91 cm and a mean height of 19.31 m. Kisnawati (2011) also observed 5-year-old *N. cadamba* planted small farms in South Kalimantan, with a mean DBH of 6.0-16.4 cm and a mean height of 4.1-14.6 m. *T. copelandii* exhibited commendable growth as well, with a mean DBH of 23.84 cm and a mean height of 16.45 m.

These data provide a valuable baseline for projecting the growth potential of timber trees planted by smallholders. Tree volume per species was calculated based on DBH, height, and a form factor of 0.33. *F. moluccana* exhibited the highest volume per tree at 0.49 m³, followed by *N. cadamba* at 0.34 m³, and *T. copelandii* at 0.24 m³.

ISSUES AND CHALLENGES

The project faced several issues and challenges during its implementation, outlined as follows:

1. Definition of Smallholder

Initially, smallholders were defined as landowners with less than 10 acres of land. However, throughout the project implementation, various stakeholders expressed interest in tree planting, including local communities, oil palm plantations, and Forest Management Units (FMUs). Recognizing the potential for broader engagement, the project management decided to include these stakeholders as participants in the project.

2. Proximity of Planting Site to Processing Mill

Traditional practices often focus on matching tree species to planting sites, but frequently overlook the importance of the distance from the planting area to processing mills. Considering the distance is crucial for ensuring the efficient connectivity between upstream planting activities and downstream industries.

3. Certification of Smallholder Plantation

Large-scale plantations, such as Forest Management Units (FMUs), are required to certify their industrial tree plantations to facilitate the export of timber and related products. However, this process can pose a significant challenge for smallholders, who may not have the capacity for certification.

4. Market Access

Smallholders frequently encounter difficulties in accessing profitable markets due to poor infrastructure, limited bargaining power, and insufficient understanding of market demands. Consequently, they often depend on middlemen, who may offer lower prices, thus reducing profitability. Addressing these market access challenges is vital for ensuring sustainability in the forest plantation sector.

5. Outreach and Collaboration

The project management has overestimated its outreach capabilities given the limited available resources. This challenge can be addressed through collaboration with other organizations. In recent years, the project management has partnered with the Earthworm Foundation to enhance outreach efforts by co-hosting seminars focused on tree plantation.

CONCLUSIONS

In conclusion, this 12th Malaysia Plan (RMK12) project represents a significant initiative aimed at promoting sustainable tree planting among smallholders and local communities in Sabah. With a robust budget and a target distribution of 50,000 seedlings, the project not only enhances timber production but also fosters community engagement in forest plantation practices. The progress made thus far, evidenced by the distribution of 38,482 seedlings and the active participation of 82 smallholders across multiple districts, underscores the potential for this initiative to reshape the timber industry in a more sustainable direction.

However, the project has encountered several challenges that must be addressed to ensure its continued success. Defining the criteria for smallholders, considering the proximity of planting sites to processing mills, overcoming certification barriers, enhancing market access, and improving outreach through collaboration are crucial steps moving forward. Addressing these issues will not only benefit smallholders but also contribute to the overall sustainability of the forest plantation sector in Sabah.

By fostering partnerships and leveraging available resources, the project management can create a more inclusive and effective framework for supporting smallholders and local communities. Continued research, monitoring, and adaptive management will be essential in achieving the goals of RMK12, ultimately ensuring a thriving and sustainable timber industry that benefits both the environment and the local economy.

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