

NOTES

A NOTE ON THE GERMINATION OF *DRYOBALANOPS AROMATICA* AND *SHOREA MACROPTERA* IN DIFFERENT SOWING MEDIA

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Germination tests on many dipterocarp species have been carried out at the Forest Research Institute Malaysia (FRIM) by Tang (1971), Tang and Tamari (1973), Sasaki (1980), Yap (1981), and Ng and Mat Asri (1991). These germination tests were either carried out in the laboratory or in the nursery. The usual medium used for germination in the FRIM nursery is a 100% forest top soil or a mixture of forest top soil with sand in the ratio of 3:1 or 1:1 by volume and it is assumed suitable for all species. Garcia *et al.* 1983 indicated that *Vatica mangachapoi* preferred pure sand for optimum germination. On the other hand, high germination of *Podocarpus imbricatus* (Fernandez 1978) could be obtained in media such as sand, ground moss, forest soil, mixture of forest soil and sand or ground moss and sand in a ratio of 1:1.

This experiment was carried out to observe the effect of different sowing media on the germination of *Dryobalanops aromatica* Gaertn. f. (kapur) and *Shorea macroptera* Dyer. (meranti melantai). Fruits of *D. aromatica* were collected from Jalan Kapur, FRIM and those of *S. macroptera* were from Pasoh Forest Reserve Negeri Sembilan, Malaysia. The fruits were dewinged to facilitate germination and they were sown 2 cm deep with their pointed end facing into the following media:

1. 100% forest top soil
2. 100% tin mine sand
3. Mixture of forest top soil and sand (1:1)
4. Mixture of forest top soil and sand (1:2)
5. Mixture of forest top soil and sand (2:1)
6. Mixture of forest top soil and sand (3:1)
7. Mixture of forest top soil, compost and sand (3:2:1)

(The compost was made from the leaves and grasses swept around the buildings in FRIM's compound)

For each medium, 50 fruits of *D. aromatica* and 25 fruits of *S. macroptera* were used. The treatments were arranged in completely randomised design with four replications. The germination beds were fully shaded with *Nyssa* palm leaves. Watering was carried out twice a day, i.e. in the morning and late afternoon. Germination was recorded daily. A seed was considered germinated when the shoot had emerged above the media. The experiment was terminated after 45 days since there was no more germination observed and the left-over seeds had rotted due to fungal attack.

The seeds of *D. aromatica* and *S. macroptera* started to germinate in the first week and completed germination in the fourth week (Figures 1 and 2). Ng and Mat Asri (1991) also found that the germination period of most dipterocarp species was within four weeks. This could probably be due to the fact that most dipterocarp species do not exhibit seed dormancy.

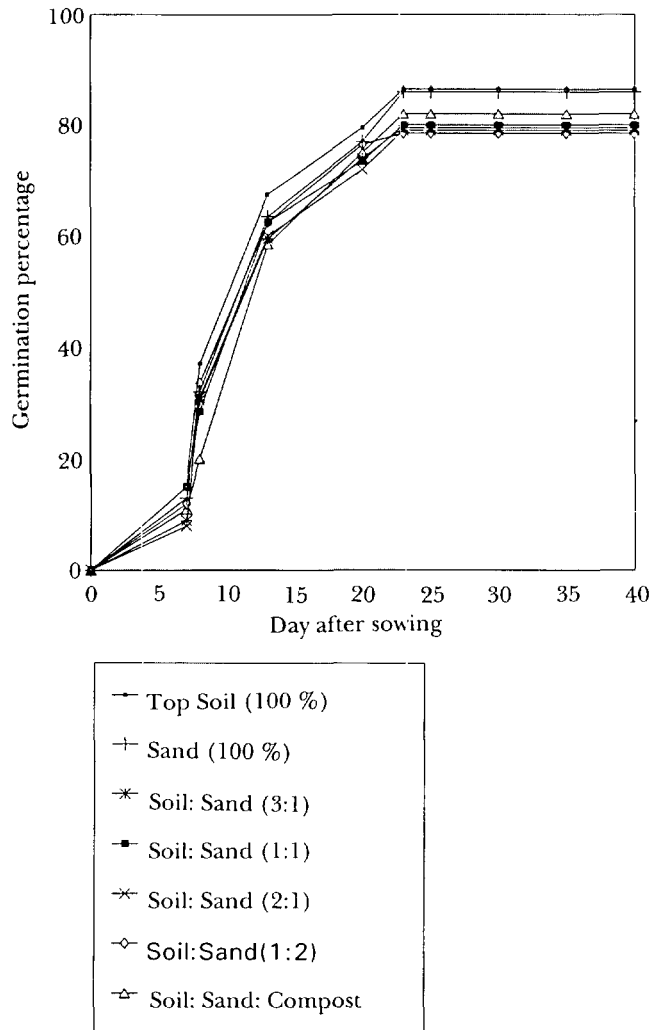


Figure 1. Germination rate of *Dryobalanops aromatica* in different sowing media

Mean cumulative germination of *D. aromatica* and *S. macroptera* at the termination of the experiment was not significantly affected by the media used (Table 1). Highest germination of 86% was obtained in 100% forest top soil and 100% tin mine sand for *D. aromatica*. For *S. macroptera* highest germination was obtained in the mixture of soil and sand in the ratio of 3:1 (73%). Addition of compost to the germination medium did not increase the germination percentage of these species. Garcia *et al.* (1983) also found that germination of *Shorea negrosensis* did not differ significantly in the media of sand, soil, sawdust or combinations of any of the two media in the ratio of 1:1.

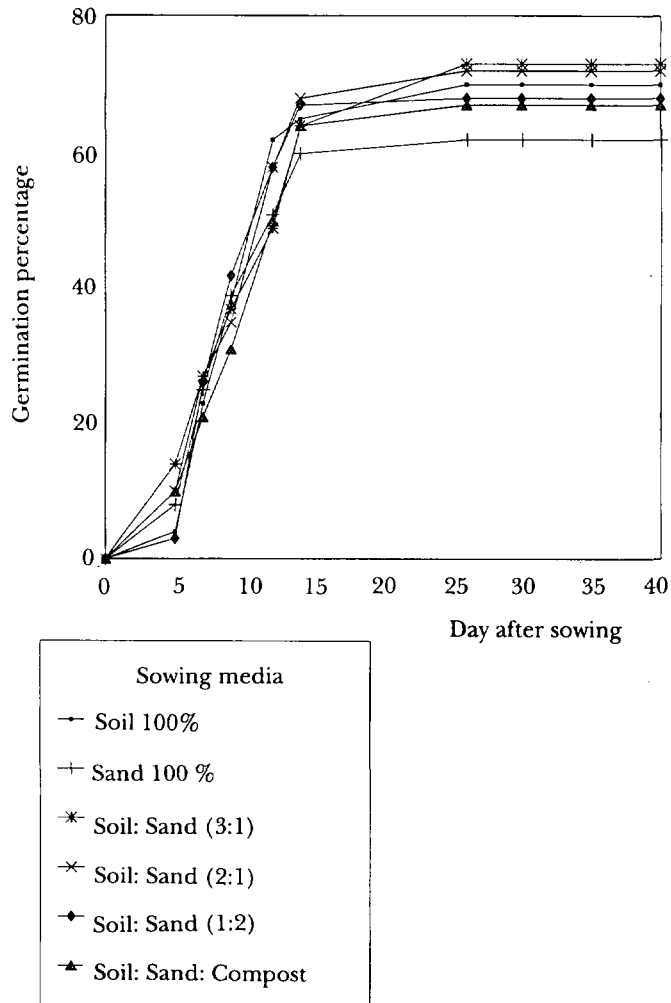


Figure 2. Germination rate of *Shorea macroptera* in different sowing media

Table 1. Mean cumulative germination percentage of *Dryobalanops aromatica* and *Shorea macroptera* in different sowing media (at the termination of the experiment)

Medium	Germination %	
	<i>D. aromatica</i>	<i>S. macroptera</i>
100% forest top soil	86.5 a	62.0 b
100% tin mine sand	86.0 a	70.0 b
Mixture of soil, compost and sand (3 : 2 : 1)	82.0 a	67.0 b
Mixture of soil and sand (1:1)	80.0 a	66.0 b
Mixture of soil and sand (3:1)	79.5 a	73.0 b
Mixture of soil and sand (2:1)	79.0 a	72.0 b
Mixture of soil and sand (1:2)	78.5 a	68.0 b

Means followed by the same letters for each species are not significantly different ($p < 0.05$).