NOTES

A NOTE ON DIP TREATMENT OF MERANTI WITH BISTRIBUTYLTIN OXIDE - A COMMERCIAL WOOD PRESERVATIVE

Salamah Selamat, Fauzidah Ahmad & Habibah Mohamad

Forest Research Institute Malaysia, Kepong, 52109 Kuala Lumpur, Malaysia

Light red meranti (LRM), yellow meranti (YM) and dark red meranti (DRM) are light hardwoods of the genus *Shorea* (Dipterocarpaceae). They are considered to be excellent timbers for various applications except when used outdoor and in heavy construction where they have to be properly selected, seasoned and treated (Anonymous 1981, Choo & Lim 1982, 1983 & 1988).

The most widely used preservative in Malaysia for protection of wood is copper chrome arsenic (CCA). The possibility of using organotin compounds as wood preservative has been investigated since the early 1950s and tributyltin oxide (TBTO) is the most economical and widely used joinery preservative in the United Kingdom (Savory & Carey 1979). The advantages of this preservative over CCA are their pronounced fungicidal activity, their moderate mammalian toxicity and effective use after treatment.

Three timbers, yellow meranti, light red meranti and dark red meranti, were used in an experiment to determine the effect of dip treatment with TBTO. The moisture content ranged from 26% weight/weight to 28% weight/weight. The sample size was 800 × 25 × 60 *mm*. A commercial wood preservative containing TBTO was used at 1% weight/weight of solution strength. The treatment condition was divided into four groups as shown below:

A	Soaking for 1, 2 and 3 *h* - samples not end coated;
B	Soaking for 1, 2 and 3 *h* followed by brushing method (twice) - samples end coated;
C	Soaking for 1, 2 and 3 *h* followed by brushing method (twice) - samples not end coated;
D	Soaking for 1, 2 and 3 *h* - samples end coated.

After treatment the samples were analysed for their total tin content using Malaysian Standard MS 835 (Anonymous 1984). The analytical results on the total tin content are illustrated in Figure 1 and statistically analysed in Table 1. Further statistical analysis was carried out to determine the interaction for all possible combinations of the factors (species, time and treatment). The results show that there is no interaction for all possible combinations of the factors, and the level of one factor (in form of TBTO) does not depend on the levels of other factors. The total tin content was significantly higher in light red meranti and yellow meranti than in dark red meranti. This indicates that the two species were able to absorb TBTO using soaking treatment more easily than dark red meranti.

Statistical analysis shows that dipping time did not affect the amount of total tin penetrated into LRM & YM, and samples belonging to treatment A and C were significantly better treated (in the form of TBTO contents) than samples belonging to other groups. More chemical was thus found to penetrate both end sections of the wood. With the addition of other insecticides, this treatment is suitable for protection of timber against insect and fungi after processing (moulding, drilling) and before finishing.

Table 1. Analysis of Variance by using Duncan Multiple Range Test

Source (factor)	DF	Anova SS	Mean square	F value	Pr>F
Species	2	0.04905	0.02479	10.19	0.0001
Time	2	0.00750	0.00375	1.54	0.2165
Treatment	3	0.06020	0.02007	8.25	0.0001
Species × Time	4	0.00943	0.00236	0.97	0.4252
Species × Treatment	6	0.01832	0.00305	1.26	0.2802
Time × Treatment	6	0.01155	0.00193	0.79	0.5776
Species × Time × Treatment	12	0.02901	0.00242	0.99	0.4565

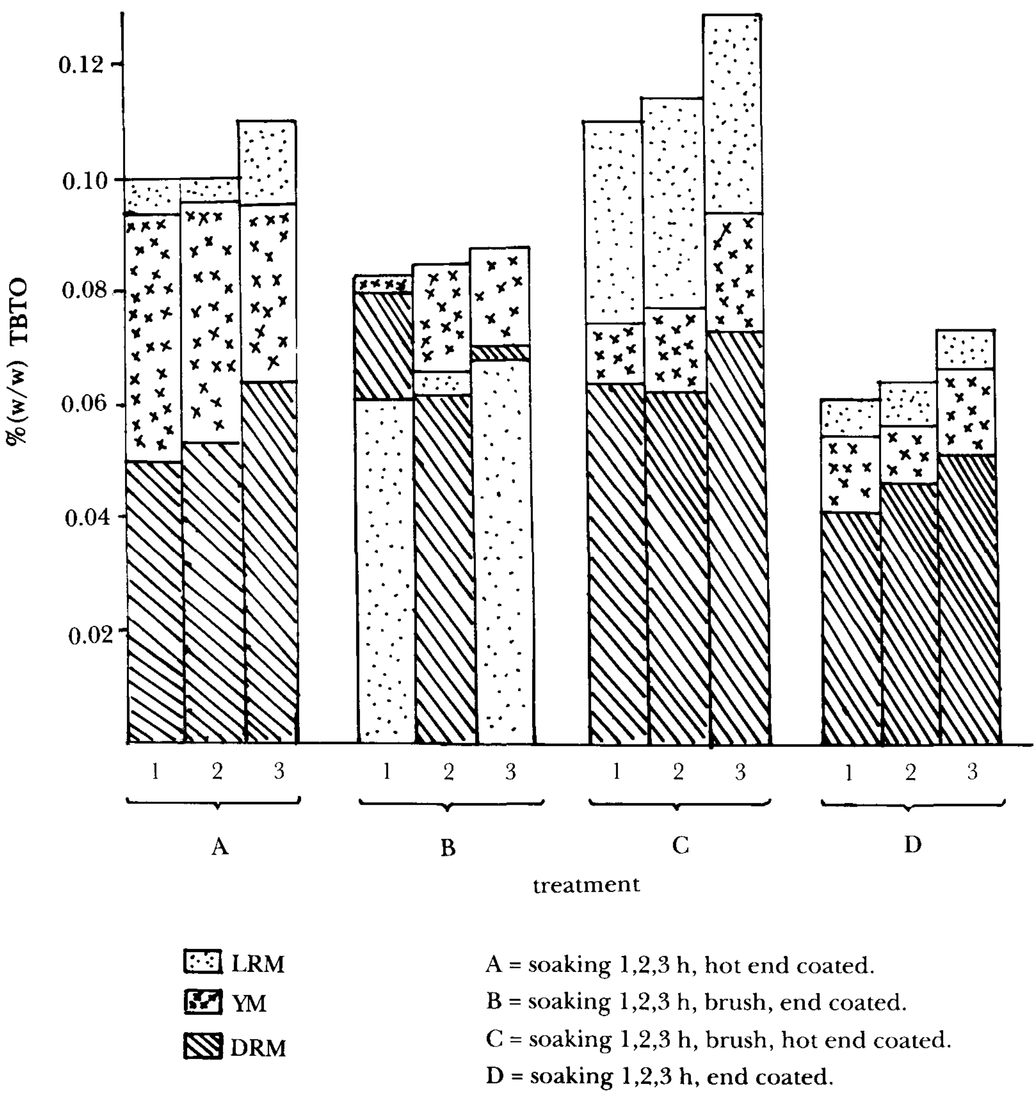

Figure 1. The percentage of TBTO in light red meranti (LRM), yellow meranti (YM) and dark red meranti (DRM) after treatment

References

ANONYMOUS. 1981. Properties and uses of commercial timbers of Peninsular Malaysia. *Malaysian Forest Service Trade Leaflet No. 40.* Malaysia Timber Industry Board.

ANONYMOUS. 1984. Method for the quantitative analysis of bis(tri-n-butyltin) oxide preservative formulations and treated timber: Determination of total tin. *Malaysian Standard MS 835: 1984.* Standards and Industrial Research Institute of Malaysia.

CHOO, K.T. & LIM, S.C. 1982. Malaysian timbers - dark red meranti. *Malaysian Forest Service Trade Leaflet No. 69.* Malaysian Timber Industry Board.

CHOO, K.T. & LIM, S.C. 1983. Malaysian timbers - light red meranti. *Malaysian Forest Service Trade Leaflet No. 75.* Malaysian Timber Industry Board.

CHOO, K.T. & LIM, S.C. 1988. Malaysian timbers - yellow meranti. *Malaysian Forest Service Trade Leaflet No. 107.* Malaysian Timber Industry Board.

SAVORY, J.G. & CARY, J.K. 1979. Decay in external framed joinery in the United Kingdom. *Journal Institute of Wood Science* 8:176-180.

A NOTE ON THE COPPICING ABILITY OF *SHOREA* SPECIES IN PEAT SWAMP FORESTS IN PENINSULAR MALAYSIA

Shamsudin Ibrahim

Forest Research Institute Malaysia, Kepong, 52109 Kuala Lumpur, Malaysia

Flowering and fruiting in the family Dipterocarpaceae are gregarious and irregular. Ashton (1982) reported that the frequency of gregarious flowering and fruiting of *Shorea* species in hill and lowland dipterocarp forests varies between one to five years. It has been observed that heavy recruitment of seedlings usually occurs in hill and lowland dipterocarp forests after each gregarious fruiting season (Whitmore 1984). While regeneration from seed is the norm, little is known of coppicing of *Shorea* seedlings in these forest habitats. In contrast, *Shorea* species in peat swamp forests, especially *Shorea uliginosa* and *Shorea teysmanniana*, exhibit excellent coppicing power (Wyatt-Smith 1963). Coppicing is probably an alternative growth strategy shown by *Shorea* seedlings in peat swamp forests to effectively compensate for an infrequent flowering and fruiting habit. Ashton (1982) noted that gregarious flowering and fruiting o dipterocarp trees had not been reported in peat swamp forests but had been observed in dipterocarp forests elsewhere in the country.

During a recent visit to the Sungai Karang peat swamp forest in Selangor, it was discovered that a healthy seedling of *S. uliginosa* coppiced from a sapling that had been bulldozed and buried during the construction of a logging road (Figure 1). In another area of peat swamp forest in Kuala Langat, Selangor, coppicing was found to be a common characteristic in *S. teysmanniana* seedlings. A new coppice shoot is usually produced to replace an old shoot that has been affected by die-back. On close examination, it was discovered that young shoots of *S. teysmanniana* at Kuala Langat peat swamp forest were attacked by borers which may be the major factor that causes die-back (Figure 3). Whitmore (1984) reported an extensive damage done to *Shorea albida* in peat swamp forest of Sarawak and this damage was caused by caterpillar (Hymantridae) which