

LIBERATION THINNING IN PEAT SWAMP FOREST IN SARAWAK

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Summary. Liberation thinning were carried out one year (LT1) and ten years (G10) after logging in the Jemoreng Permanent Mixed Peat Swamp Forest plots in 1971 and 1992 respectively. The logged over peat swamp forest had various distributions of woody forest weeds, reserved and protected timber trees. At LT1, the percentage of the various diameter breast height (DBH) of the woody forest weeds was 59.5% of 20-41 cm, 37.1% of 42-62 cm and 3.4% of >62 cm. At the G10 treatment, narrow range of DBH of the woody forest weeds were taken. The size distribution of woody forest weeds at G10 was 41.4% of 10-19 cm DBH, 42.5% of 20-29 cm DBH, 10.5% of 30-39 cm DBH, 2.5% of 40-49 cm DBH, 1.8% of 50-59 cm DBH and 1.3% of >60 cm DBH. The distribution of trees at G10 was 11.9 for protected trees, 75.2% for reserved trees and 12.8% for woody weeds.

INTRODUCTION

The selective management system in forestry is widely practised in Malaysia. This system is adopted with the intention that current harvest will not jeopardise future yield by leaving sufficient residual trees that assume to be matured in the next cutting cycle (5). The success of this ultimate aim can only be achieved with the knowledgeable and suitable techniques of silvicultural treatments. Thus good stand conditions will satisfy all the requirements for tree growth and result in high survival, rapid growth and early maturity of crop species (2).

Liberation thinning is one of the major silvicultural activities in the logged-over peat swamp and mixed dipterocarp forests particularly in Sarawak. This treatment is defined as the process of selecting as many as possible, ideal and desirable crop trees of "listed species" which have survived logging, and liberating the best of them from competing with trees of less value, leaving others untouched (3, 4, 1). This paper will report the activity, general technique employed during the silvicultural field treatment and the composition of both commercial and weed species carried out at Jemoreng Mixed Peat Swamp Permanent Forest in Sarawak.

METHODS

Two treatments were carried out at Jemoreng Mixed Peat Swamp Permanent Forest with the area of 1152 ha. The area was divided into 24 blocks, i.e. 48 ha per block in order to treat the area systematically. The first treatment (LT1) was conducted in 1971 or one year after felling. This regenerated forest was also treated in 1992 as G10 treatment. Before G10 treatment, diagnostic sampling at 1% intensity was carried out in 1979 or 10-12 years after felling. This area was found to have adequate stock of desirable species (74.9%), weighted mean basal area of 22.32 m²/ha. The weighted basal area of selected desirable (LD) is 2.36 m²/ha. Thus the remaining basal area is 19.96 m²/ha or 89.43% of the total standables. The regeneration potential crop trees consisted of Kapur paya (*Dryobalanops rappa*), Merantis (*Shorea* spp.), Sepetir paya (*Copaifera palustris*), Ako (*Xylopiya corisfolia*), Kepayang babi (*Mezzettia leptopoda*), Kelampu (*Sandoricum emarginatum*), Kumpang paya (*Horsfieldia crassifolia*), Nyatoh jangkar (*Palaquium walsurifolium*).

Other weed situations

In the field operation, six crews were deployed. Each crew consisted of seven men. Each crew member was allocated with different work task. A labourer was assigned to divide the 48 ha block (600x800 m) into strips, each 40 m wide parallel to the longer side of the block. The boundaries were marked with red plastic flagging for guiding the crews. Cutting should be at the minimal level and chopping of the desirable and acceptable species (including saplings and seedlings) was also avoided. Each crew should have an officer who is familiar and good at identifying tree species. A labourer assist him in marking these trees that he had reserved or rejected by painting them with a short line or a cross. This two-men unit moved within the strip in a zig-zag manner., recording, marking and Diameter Breast Height (DBH) measurement for all suitable trees of desirable and acceptable species for reservation.

One staff member leads three labourers, each equipped with an axe, chisel, poison kettle and a note book and a pencil following closely behind the two men who scouted for reserve trees. For tree poisoned, he kept a "gate-count" by species and diameter class. The trees to be poisoned were marked either by knife slash or cross by crayon. He also kept a "gate-count" by species and diameter classes for the trees reserved by the identification team.

RESULT AND DISCUSSION

Chai (1) reported that Modified Malayan Uniform System, Liberation Thinning and Relics Removal could stimulate diameter increments of the reserved trees. The mean periodic diameter annual increment of reserved trees of *Shorea* spp. of Modified Malayan Uniform System varied from 1.21 to 1.52 cm, Liberation Thinning from 1.02 to 1.32 cm, and Relics Removal from 0.88 to 0.95 cm and Control treatment from 0.52 to 0.72 cm. In both LT1 and G10 treatments, reserved trees were the most dominant group (Table 1 and 2). The number of protected trees was almost the same number as those from weed species. The percentage of poisoned trees was ranging from 10.0% to 12.8%. The slight increment of the percentage of weed population probably due to their rapid regeneration after the LT1 treatment. This was evident by the high percentage (>80%) of weed population from 10-29 DBH (Table 3). The huge number of weed species at this size proved the weakness of limiting the minimal size of weed trees from 20 cm DBH for poisoning.

Table 1. Percentage of protected, reserved and weed species in LT1 and G10 of Jemoreng Peat Swamp Permanent Forest

Treatment	Percentage		
	Protected	Tree group reserved	Weed species
LT1	12.6	77.4	10.0
G10	11.9	75.2	12.8

Other weed situations

Table 2. Number of trees from different tree groups varied in size from G10 treatment

Tree group	Total number of trees					
	Tree size [BDH (cm)]					
	10-19	20-29	30-39	40-49	50-59	>60
Protected	8823	5498	2790	1104	418	175
Desirable	9873	6255	4462	2511	769	262
Acceptable	35155	25616	9652	3055	746	214
Other	7787	6640	4348	826	233	41
Poisoned	8368	8598	2126	499	366	256

Table 3. Number of poisoned trees varied in sizes

Treatment	Distribution of trees (%)					
	DBH 9cm)					
	10-19	20-29	30-39	40-49	50-59	>60
LT1	59.5		37.1			3.4
G10	41.4	42.5	10.5	2.5	1.8	1.3

The silvicultural technique of Liberation Thinning required experienced and trained personnels and workers. They should be familiar with its concept and be able to identify most of the common trees species in the peat swamp permanent forest. The implementation of Liberation Thinning should also emphasize on the activity of present conservational and bio- diversity principles. A thorough understanding of the biological and ecological characteristics towards which vegetation management prescriptions are directed. In the enumeration of the technique, the personnels and workers should varify clearly the ethnobotanical importance and modes of horticultural for individual forest species including weed species and climbers. Thus the selected species which had been identified could be conserved for future needs and as source of food for wildlife.

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Other weed situations

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