

RWG6 FIRE MANAGEMENT JULY 3 & 4, 1990

DISCUSSION PAPER: SPECIFICATIONS FOR CROWN FIRE FREE ZONES - TEMPORAL AND SPATIAL CONSIDERATIONS, AND RESEARCH REQUIREMENTS.

INTRODUCTION

This paper addresses the situation in Woods and Forests Department pine plantations in the South East Region of the State where plantations are in large blocks - up to 10 000 ha or so, with continuous "runs" of up to 40 km possible.

Prior to 1983, external plantation edges and plantation margins adjacent frequently-used public roads were low-pruned as a fire protection measure. The width of this pruning was generally 20m, but, in highly strategic locations, was 40+m. In addition, some broad-acre treatment including slash modification or disposal was carried out. This was mainly around settlements but involved one 300m-wide strip across a long strip of plantation NW of Mount Burr. Edge strip and settlement protection works remain current practice.

In the replanting of the large areas burnt in 1983 at Penola and Mount Burr Forests over a period of ten years the question of fire protection and minimising losses to future fires arose. There was also the issue of social responsibility in regard to fire prevention, now enshrined in the Country Fires Act 1989 requiring the Department (and other government agencies) to "take reasonable steps to protect property on the land from fire and to prevent or inhibit the outbreak of fire on the land, or the spread of fire through the land" (emphasis mine).

CONSIDERATIONS

1. How can an objective, scientific approach be taken in relation to:

- (1) Minimum % of area to be treated. (Treatment of the whole plantation area is beyond reasonable bounds of cost and productivity loss). The end-result will be a compromise between cost and effectiveness - but where and how is the balance to be struck?
- (2) The concept of treating strips of plantation. What should be the:
 - minimum width?
 - frequency of strips?
 - configuration and orientation of these strips?
 - treatment specification(s), including what to do with debris?
- (3) Should such strips be:
 - fixed, regardless of plantation age?
 - "shifting"; i.e. tied to mid+ aged stands?
 - "built" on the back-bone of a road or major access route?
 - planned to avoid ineffective plantation and open areas?

(4) The many variables such as:

- plantation stage
- fuel quantity, distribution and condition
- the range of wind directions accompanying severe fire weather.

(5) The treatment of early-stage plantations (i.e. pre-T1) to be crown fire free? Most previous treatments have occurred in mid- to late-stage plantations.

2. The Department's basic plantation management aims; i.e., maximum site occupancy and prescribed optimum stocking levels to produce maximum value without loss of volume production.

3. The Department's aims in fire protection to:

- effect "regulated rapid and concerted initial attack" on fires
- "minimise entry of fires onto and damage from fires occurring on Department land". This requires minimal area burnt.

(Quotations from Woods and Forests Department Forestry Manual Vol. 2).

4. Under what conditions should specified fire protection treatments in plantations be effective?

TASK GROUP

Following recognition of the "desirability of breaking up large areas of plantation with strategically placed, relatively large scale fuel modified areas" a task group was commissioned in late 1986 "to formulate a long term plan for the creation of fuel modified protection areas". (Quotations from the task group report).

The group comprised four staff from Forestry Branch, and one each from Harvesting and Forest Resources Branches.

PRESCRIPTIONS

1. Fuel modified protection areas, general specifications.

Recommended by the task group and accepted by the Department's Executive were prescriptions aimed to produce fuel modified protection areas (FMPA's) to:

- reduce flame height and rate of forward spread, prevent the formation or maintenance of crown fires and so enhance the likelihood of controlling fires on days of Very High and Extreme Forest Fire Danger (F.F.D.).
- be suitable locations on which to attack fires or to shelter during their passage.

- produce some clear-wood suitable for veneer.

FMPA's are of a specified (standard and) minimum width of 200m and shall include a road. Such roads should:

- be as straight as possible,
- pass through normal plantation (i.e. avoiding non-forested or "failed" areas), and,
- enclose "cells" of plantation of approx. 2 000 to 3 000 ha. This will result in approx. 4% of the net plantation area being treated (2 400 ha).

- Notes
- a. Due to the range of directions from which serious fires can be blown (i.e., principally N-NW-W-SW) it was considered that relative straightness of the FMPA's was of greater importance than orientation.
 - b. On the days of most severe F.F.D. it is acknowledged that, at least due to likely spotting, FMPA's are unlikely to enable suppression of headfires. However, under such conditions, flank containment should be aided, depending on FMPA location and orientation.

Included in the minimum 200m FMPA width is:

- the width of the road and associated firebreaks,
- 50m-wide treated strip on the expected "downwind" side of the road (i.e. to the S-SE-E), and,
- a minimum of 100m on the "upwind" side of the road. (If the road + firebreaks are wider than 50m, then the minimum FMPA width will exceed 200m).

2. Treatments

- (1) Stands where predominant height (mean ht. of tallest 75 t.p.h.) is 9m or less.

See Appendix 1 for prescription and some comments.

Surface fuel treatments available are:

- a. Hydro-Ax or similar machine. Confined to extraction rows. Or,
- b. Front-mounted chopper-roller on a JD 350. Difficult in areas with large stumps or heavy slash.

As soon as possible (i.e. at T2 or T3, depending on stand Site Quality) stocking in the FMPA will be brought to that of the adjoining normal plantation. Thereafter, the FMPA will be managed at stockings identical to the adjoining plantation to the end of the rotation.

Where tree vigour and form permit, ER3 (which allows greater scope to Hydro-Ax, the favoured treatment) is preferred. However in most areas, ER5 has to be used in order to retain sufficient trees with acceptable growth characteristics. (The use of cuttings instead of seedlings may be of benefit).

(2) Intermediate stands: i.e. taller than 9m P.D.H. but not due for T1.

Low-prune selected trees as soon as possible: the number selected being the intended T1 residual stocking + 10%. Pruning should follow the schedule:

<u>P.D.H.</u>	<u>Ht. of Pruning</u>
12-14	2.5 m
15-17	4.5 m
18-20	6.0 m

T1 to occur as early as commercially viable to a stocking some 20% below recommended minimum thinning guide numbers.

Subsequent management: as in (1).

(3) Older-aged stands: i.e., post-T1

a. Between T1 and T2

Prune to 6m if considered necessary. Roll or slash surface debris.

b. At or after time of T2

Prune to 6m if considered necessary. Roll or slash surface debris.

INVESTIGATIONS

Investigations under way or to be carried out include:

- (1) The use of cuttings at lower initial stockings in FMPA's.
- (2) Leaving each 3rd or 5th row unplanted. Is tied to (1).

It is also possible that prescribed burning will have limited application, especially in highly strategic locations, e.g. adjacent townships, where FMPA's may exceed 200 m in width, and trees are of sufficient age.

J. Pratt
SENIOR FORESTER, S.E.

JP:KM
 4.5.90

SPECIFICATION: FUEL MODIFIED PROTECTION AREAS

STANDS NOT EXCEEDING 9M P.D.H.

Regime	OPTION (C)		
	TIMING	OPERATION	STOCKING
	PDH-9m	Space to 800t/ha	800
		L.P to 2.5m all stems	800
		-11-12m M.P to 4.0m all stems	800
		-14-15m H.P to 6.0m 600 stems	800
		-18-22m T1	550
Period of Protection	Effective early as crown separation and pruning following first spacing.		
Surface Fuel Treatment	Required following spacing		
Effect on Wood production Compared with the O.T.G	A loss of only 5% over a rotation or 25% of the normal T1 Volume.		
Clearwood Production	A large volume of clearwood is produced to 6 metres but width on individual trees is reduced compared with B.		
Limb Development	Limb development controlled to an acceptable level for high quality sawlog.		
Changes in wind behaviour	Early spacement will allow some extra wind effect but this will be short lived.		
Understorey growth	Grass growth will be increased early but stand will soon re-occupy the site. Regeneration will not be a problem.		
Cost/ha to Post T1	Space	216	
	LP	536	
	MP	800	
	HP	600	
	Treat (x1)	120	
	TOTAL		\$2154