PLANTATION BURNING

by P.N. Hewett

Over the past few years, a great deal of discussion has revolved around the prospects of controlled burning of Pine Plantations in Western Australia.

The winter of 1965 saw unprecedented activity in this field, with upwards of 800 acres of plantation burning completed in the Metropolitan and Wanneroo Divisions alone. It is pertinent therefore, to look at some of the arguments both FOR and AGAINST this approach to plantation fire control, since it seems certain to become a "HOT ITEM" in one way or another in the next four or five years.

1. THE CASE AGAINST.....

The biggest threat to our plantations, in the absence of widespread fungal or insect attack, is undoubtedly, the threat of FIRE. It is therefore unwise to deliberately introduce fire to the plantation, if it can possibly be avoided. A very cool fire will do little to reduce the quantity of fuel, and a very warm fire may kill the crop trees, or at least destroy surface feeder roots which are concentrated in the Ao and Aoo horizons. Somewhere in between these two extremes lies the ideal pine burn, but can this degree of precision be guaranteed, when we are dealing with fuel as sensitive as pine needles. Can anyone be sure that the burning conditions can be judged to such a fine tolerance when a windchange of 2 mph. can completely alter the fire!.

Pine burns are costly, since only small areas can be handled at any given time, and the manpower component is high. In addition, the winter conditions necessary will normally limit actual burning time to three or four hours per day. Much less is known about winter weather conditions and fuel behaviour at low temperatures, than is known about summer fuel conditions. The number of suitable burning days is small, and wind strength is the principal factor which determines spread rate, intensity of fire, and length of burning time. It was most apparent in winter 1965, that winter high pressure systems are not accompanied by steady winds, except for a few hours before the low pressure trough comes in.

Regular burning of the same areas could result in such a fuel reduction that early Spring conditions are needed for an effective burn. This invokes risks from underground fires, 'Sleeper' fires, and smouldering stumps.

Experience of summer fires in plantations has shown that some of the fire damaged trees take up to four or five years to die. How then, can a controlled burning programme be assessed as effective in time to organise future programmes on an annual basis.

The principal marketing problem after a summer fire, is the effect of charcoal fragments scoring the freshly sawn pine surface. Will control burned areas produce logs which lack this feature!

2. THE CASE FOR.....

Those of us whor have had some experience of wildfire in plantations, will agree that there are many difficulties, and among the greatest problems are: -

a) Intense temperatures at the headfires, even under relatively mild conditions.
b) Rapid spreadrate and early development of intense spotting.
c) Lack of a proven technique for attack on the headfire.
d) Inability to use handtools effectively, especially in thinning slash and inter-woven tops.

For the coastal plantations, we should perhaps add a fifth problem, namely, the lack of immediately available manpower, and the poormanoeuvrability of even four-wheel drive plant.

An effective and extensive controlled burning programme will decrease headfire intensity and spotting intensity, and will facilitate control of spots which do occur. As headfire intensity decreases so does rate of spread, and at the same time, it is anticipated that normal headfire attack methods as used in the hardwood forest, will be applicable. Personnel engaged in the plantation control burning will gain vital experience in the least understood branch of fire control, and this must assist in wildfire suppression.

Experience at Somerville and at Gnangara this year, has shown that a 30% decrease in fuel quantity has been achieved, and that areas of heavy thinnings slash can now be readily raked down to mineral soil with conventional handtools.

Firebreak maintenance is an annual event, and costs 25/- per acre or more. Cost studies on controlled burning suggest that 5/- peracre is about the minimum possible with present techniques, and although greater areas may be involved, we are at least growing timber on the burning areas. It seems logical therefore that once thetechniques have been perfected, it should be possible to decrease the width of major cleared breaks. In addition, the flotation properties of coastal sands within the plantation are at least 50% better than on the ploughed breaks, and this could help with movement of plant at fires and for general management purposes.

There is no evidence in Western Australia that controlled burning in plantations will decrease growth rate, and in the short term a reverse effect may result from the increased Potash available to trees. Several studies have been initiated to investigate short and long term effects, but no valid results will be available for at least a couple of years.

One final argument in favour of controlled burning in plantations is rather local in character. The Metropolitan plantations, (Collier & Somerville) are rapidly becoming surrounded by suburban development, and the incidence of summer fires in these areas has increased in proportion to the number of homes built. The larger plantations of the Wanneroo Division are somewhat remote from this problem at present, but one suspects that the position will not remain static, especially with the development of small FARMLETS on the Western and Southern flanks. In these circumstances, it is submitted that there is no choice. Controlled burning MUST be tried on a large scale for plantations such as these...