CANADA

Timber Talks

Department of Fisheries and Forestry

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HOW MUCH LOGGING SLASH No. 77

The size and distribution of fuel components in logging slash strongly influences the behavior and results of prescribed fires. Various methods have been used for obtaining a reliable inventory of slash fuels, but those that are acceptable are tedious and time-consuming. The need for an alternative method that provides an equal or better inventory more expeditously has been recognized by those concerned with fire prevention and suppression. The feasibility and practability of using low-level 70 mm photography for this purpose was investigated on Vancouver Island.

Three operators independently measured the mid-diameter of each fuel component that intersected lines established on 25 plots located in a cut-over Douglas-fir and western hemlock stand. Each plot was photographed from 100, 250 and 400 ft by two simultaneously activated 70 mm cameras mounted on a helicopter. Enlarged prints were made and the ends of the "intersect" lines verified on the ground and marked on the photographs. Photographs taken at 100' had the best resolution and were used for testing various techniques for measuring the fuel characteristics. A modified Addo-X model 353 tree ring analyzer was considered the most suitable for direct measurements, and was used by 3 operators for measuring randomly oriented fuel components that intersected the "intersect" lines. Photographic measurements of marked fuel components were made with a Wilde A40 plotter and with a collimator lens.

The mean number of fuel components and fuel loading (lb/ft^2) was slightly less, but more consistent, from photographic measurements than from field measurements. The diameter of fuel components measured on the photographs with either a Wilde A40 plotter or a collimator lens was larger than when measured on the ground. Depth of fuel could not be accurately measured on the photographs with an Abrams height finder, and if a Wilde A40 plotter was used there was a consistent bias. The photographs were not suitable for measurement of fuels less than 0.5" diameter, or for a reliable assessment of piled fuels or of old slash that was obscured by vegetation.

Low-level 70 mm photography has good potential for slash fuel inventories and has certain advantages over the conventional techniques. Slash fuel inventories determined from air photo interpretations were as reliable as those measured in the field, except where the fuels were piled or obscured. Photographic interpretation is not impeded by adverse weather and photographs become a permanent record of conditions on the site. Photographic measurements are sometimes biased but this can be corrected by calibration techniques. The scope for improvements in field sampling methods is considerably less than that anticipated in photography and photogrametic techniques and photo interpretation.

REPORT: Slash Fuel Inventories from 70 mm Low-level Photography. S.J. Muraro, Forest Research Laboratory, Victoria, B. C.