

THE INTERNATIONAL CROWN FIRE MODELLING EXPERIMENT FUEL TREATMENT TRIALS

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ABSTRACT

Several fuel treatment demonstration trials or case studies were carried out as part of the International Crown Fire Modelling Experiment (ICFME), Northwest Territories: 1) demonstrating the value of fully leafed-out trembling aspen (*Populus tremuloides*) stands as fuelbreaks during the summer (one plot dominated by aspen with the ignition face consisting of jack pine [*Pinus banksiana*]-black spruce [*Picea mariana*]); 2) evaluating the National Fire Protection Association (NFPA) 299 Standard for rural home protection from wildfires in forested areas involving 10 m of defensible space and then a further 20 m of fuel treatment (two plots); and 3) examining the relative effectiveness of low pruning-light thinning-dead and/or down woody fuel removal in modifying fire behavior (a paired plot of nearly equal proportions). These three situations were examined during the burning of the Aspen Plot on 17 June 1999, Plot I1 on 18 June 1999, and the Treated-Untreated Plot on 14 June 2000, respectively. In the case of Plot I1, unfortunately a shift in wind direction soon after ignition resulted in the crown fire flame front flanking by the simulated house-clearing-fuel-treated area as opposed to taking a direct "hit." Attempts to burn the second plot (I2) to evaluate the NFPA 299 Standard in 2000 and 2001 were foiled by weather conditions. Consequently, the NFPA 299 Standard has yet to be fully evaluated. All three experimental fires were carried out under extreme fire danger conditions according to the classification system used in the Northwest Territories; in actual fact, the Fire Weather Index component of the Canadian Forest Fire Weather Index System exceeded a value of 30 in all three instances. As a result of the efforts undertaken during ICFME the following can be concluded: 1) an aspen stand after full green-up can serve as a very effective barrier to high-intensity crown fires under certain circumstances; 2) the NFPA 299 Standard was found adequate for a flanking crown fire; and 3) the positive effects of fuel removal-manipulation on potential fire behavior may be offset by the negative effects of decreased fuel moistures and increased in-stand winds, thus enunciating the need for treating the organic layer in order to modify fire behavior. Photographs of all three experimental crown fires associated with the ICFME fuel treatment trials carried out to date can be found on the ICFME website (http://fire.cfs.nrcan.gc.ca/research/environment/icfme/icfme_e.htm).

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