The Preliminary Results of Fire Behavior in Maquis Fuels under Varying Weather and Slope Conditions

Bülent Saglam[1] Ertugrul Bilgili[2] Ömer Kücük[3] Bahar Dinc Durmaz[2] İsmail Baysal[4]

ABSTRACT

The prediction of fire behavior is of vital importance to all fire management planning and decision making processes including fire prevention, pre/suppression planning and fire use. The effect of slope on fire behavior is very well acknowledged yet its effect on fire behavior is not well accounted for. Determining the effects of slope on fire behavior under field conditions can prove invaluable and will allow for the testing of earlier studies conducted under laboratory conditions and help increase the accuracy of fire behavior prediction models.

The present study was carried out in Kesan Forest Enterprise in the province of Edirne, Turkey (40°35'56" - 40°36'05"N and 26°31'04" – 26°31'07" E). Firstly, the fuel model for the study area was determined and then the fire behavior was estimated using a series of experimental fires in maquis fuel type. Fifteen plots (2×2 m) were randomly selected to construct the fuel model. The sampled maquis plots were cleared and categorized by diameter. The relationships between the fuels and fuel properties (average height and crown closure) were analyzed by linear regression. The results indicated that fuel loadings could be accurately predicted using the regression equations obtained.

The experimental fires were conducted under varying weather and slope condition to gather quantitative data on fire spread, fuel consumption and fire intensity, and to develop fire behavior models for fire management purposes. Burns were conducted on different slope conditions and in different seasons to represent different fuel moistures and fire weather conditions. The data analyses are still in progress and the preliminary results will be presented here.

---

[1] Corresponding author, Kafkas University, Faculty of Forestry, 08000, Artvin, Turkey.
[2] Karadeniz Technical University, Faculty of Forestry, 61080, Trabzon, Turkey.
[3] Kastamonu University, Faculty of Forestry, Kastamonu, Turkey.
[4] Düzce University, Faculty of Forestry, Düzce, Turkey.