Estimation of fuel load in maquis type vegetation of Antalya

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Abstract: An important prerequisite for successful fire management is the accurate estimation of the fuel load. Equations for estimating fuel load are an important basis for determining fire behavior, fire hazard risks, fire management plans, and decision-supporting system for fire management. An accurate estimation of fire behavior is directly associated with estimating the amount of fuel. Maquis type vegetation of Antalya are designated as first degree fire sensitive (i.e. fire prone) areas with the Calabrian pine forests of Turkey's Mediterranean regions. Maquis are generally distributed as Mediterranean-Type sclerophyllous shrubland either as understory of Calabrian pine forest or on their own areas as maquis. The purpose of this study is to determine the fuel load of maquis type vegetation in Antalya region. In this study, the total fuel load was used as dependent variable, height and diameter at breast height (DBH) of dominant shrub species, depth of litter and humus later were used as independent variables. Total fuel load estimated by samples based on fuel size classes such as foliage and branches between 0,0 and 2,5 cm. The measurements were based on a total of 30 maquis type vegetation in fire prone areas of Antalya. The highest predictable percentage as a result of linear logarithmic regression analysis for the variation in total maquis fuel load was explained the most by the height of dominant shrub species/depth of litter layer ratio, which together explained 70 % of the variation (P<0.001). The variation in total maquis fuel load was explained by the ratio for depth of litter and humus layers, which together explained 68% of the variation. The variation in total maquis fuel load was explained the least by the depth of litter layer, which explained 49% of the variation. Looking at the distribution of the amount of maquis fuel loads to maquis stand type, it is seen that the highest total fuel load is belonging to Mak3 type and the lowest amount of in the BM type. It has been found that there is almost 100% difference between the total fuel load between Mak1 and Mak2 types, whereas the difference between Mak3 and Mak2 types is around 20%.

Keywords: Maqui, Fuel Load, Antalya