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## **Impact and influence of fires on plant formations: the case of the Relizane region (North-Western of Algeria)**

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### **Abstract**

This study presents the impact of fires on various plant formations in the Relizane region from 2005 to 2021. Out of a total area of 60,289 hectares, 4,217.7 hectares were burned in the Relizane Province. Forests were the most affected, accounting for 65.6% of the burned area, followed by other formations (15.8%), maquis (14.9%), and scrub (3.8%). A total of 244 fire outbreaks were reported during the study period, with 2005 being the most affected year (35 outbreaks), followed by 2020 (27 outbreaks). The annual trends indicate significant differences in burned areas across different vegetation formations, with forests and maquis showing the largest burned areas in 2005. The Kruskal-Wallis test revealed highly significant differences ( $P$ -value =  $1.4E-5$ ), and hierarchical classification identified three distinct groups based on the burned areas. The study underscores the need for improved collaboration between institutions such as the DGF, INRF, Civil Protection, and Agricultural Directorate to effectively combat fires and ensure healthy forest ecosystems for future generations.

**Keywords:** *Plant formation, Hearths, Fires, Statistical analysis*