

IMPACT OF FIRES ON SOILS IN OAK AND PINE STANDS

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Galicia in the European Union has the highest forest growth rate but also the highest incidence of forest fires in the last three decades. Around 55 percent (1.65 million ha) of Galicia has burned in the last four decades. Oaks (*Quercus* spp.) have the capacity to incorporate leaves into the soil every year, increasing the soil fertility and resilience of the land after the forest burns. The objective of this study was to analyze the impact of a forest fire on soil fertility. The experiment consisted of sampling in two areas: forest land burned in 2020 and nearby unburned areas. Soil fertility was analyzed for soil water pH, total cations, cation exchange capacity, and nutrient availability. In general, fire reduced soil quality, but the reduction was much lower in the case of *Q. robur* burned stands than *Pinus pinaster* burned stands. Topsoil (i.e., organic soil) pH was always above and below five in *Q. rubra* and *P. radiata* stands, respectively, but was not significantly different in these two forest types after fire. Mineral soil (i.e., subsoil) was also better in *Q. rubra* stands before fire than in the rest of the treatments before (*P. pinaster*) and after (*Q. robur* and *P. pinaster*) fire. However, topsoil potassium chloride pH was much higher in *Q. robur* than in *Pinus* stands in both pre and postburned soils. Cation exchange capacity was mainly composed of aluminum for *P. pinaster* stands, whereas in *Q. robur* stands it was dominated by calcium and magnesium. Soils were degraded in stand types after fire but the impact was higher in *Pinus*-derived soils. The improvement of soils in *Q. robur* stands resulted in better soil and vegetation recovery 1 year following fire.

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