



Effects of fire intensity on carbon and nitrogen in leaf litter of three Mediterranean SPECIES (QUERCUS SUBER, QUERCUS ROBUR, PINUS PINEA)

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Fire intensity has important effects on the biogeochemical cycling and availability of carbon and nitrogen in ecosystems. Both nutrients are fundamental for the health and productivity of the forest. The objective of this work is to evaluate the dynamics of carbon and nitrogen in leaf litter of three mediterranean species, (*Quercus suber*, *Quercus robur*, *Pinus pinea*) when exposed for 2 hours to temperatures of 150, 200, 250, 300, 350, 400, 450, 500 and 550°C in a laboratory environment. The results show that ash of the three species created by heating litter samples for 2 hours at low and medium temperatures (150-350°C) contains a higher percentage of carbon than unburned samples. This may be a result of the formation of charcoal. At high temperatures an abrupt reduction of carbon in the ash is observed. Comparing all species, the litter from *Pinus pinea* is most affected by the higher temperatures. The percentage of nitrogen and carbon in the ash is higher at low and medium temperatures, compared to the control. The proportion of both nitrogen and carbon increases up to 350°C, decreases significantly at temperatures higher than 400°C, and drops to levels close to zero in the *Quercus robur* samples and is totally absent in the ash of the other species. Nitrogen volatilizes at low temperatures (200°C), so the increase at low and medium temperatures, must be a result of their high presence than other elements. Once again, the *Pinus pinea* is the species more affected by heating. The response of the C:N is different from species to species; all show a reduction up to 350-400°C, but after this temperature, the C:N in

the *Quercus robur* sample stabilizes until reaching 500žC and grew abruptly at 550žC. The C:N of *Pinus pinea* shows an increase at 400žC and an abrupt decrease at 550žC due to the total loss of nitrogen. In the *Quercus suber*, the C:N decreases until 450žC and is zero at 500 and 550žC, because no nitrogen exists in the sample. The highest values of C:N are observed in the *Pinus pinea* and the lowest in *Quercus suber*.