



Temperature effects on mass loss, ash pH, Electrical Conductivity and colour of *Pinus Sylvestris* and *Acer Platanoides*. A laboratory study

Jolita Dudaite (1), Pereira Paulo (1), Edita Baltrenaite (1), and Xavier Ubeda (2)

(1) Department of Environmental Protection, Vilnius Gediminas Technical University, Saulėtekio al. 11, LT-10223 Vilnius, Lithuania (pereiraub@gmail.com), (2) GRAM (Mediterranean Environmental Research Group), Department of Physical Geography and Regional Geographic Analysis, University of Barcelona, Montalegre, 6. 08001 Barcelona (Spain)

The ash produced by fire has important impacts on the soil properties. Ash properties depend on burned specie, time and temperature of exposition. Collect ash in prescribed fires and wildland fires produced at a certain temperature is an impossible task because during a real fire the vegetation the temperatures that the vegetation is exposed are variable. To observe the effects of the temperature at a determined temperature and specie, simulations of fire in laboratory, exposing litter at certain temperatures, are very useful and a good methodology to identify the impacts of temperatures in determined specie along a gradient.

The objective of this study was to investigate the effect of different fire temperatures on certain physical and chemical characteristics of *Acer platanoides* and *Pinus sylvestris* forest litter.

For this study, we collected litter samples in a mixed forest dominated by the mentioned species around Vilnius city (45° 34' N; 044° 23 E). Litter samples of both species were collected where they were dominant in an area of approximately 15 m² and taken to laboratory, separated from other residues (leaves from other species, twigs etc...), cleaned with deionized water and dried at room temperature ($\pm 20^{\circ}\text{C}$) during 24 hours. After this task litter was exposed to the temperatures of 150°C; 250°C, 350°C, 450°C, 550°C during 2 h in a muffle furnace. After the burning, Mass Loss (ML%), pH, electrical conductivity (EC) and ash colour were assessed.

The results showed that ML% is higher at all temperatures in *Pinus sylvestris* litter ash. The highest ML was 95.5% of *Pinus sylvestris* at 550°C and 95.31 of *Acer platanoides* at 550°C. *Pinus sylvestris* ash pH, increase from 5.51 at 150°C to 9.97 at 550°C and *Acer platanoides* ash pH from 6.32 to 9.44. *Acer platanoides* ash pH was higher at 150°C than at 250°C, increasing thereafter. Ash pH from *Pinus sylvestris* presented an increasing trend from the lower until the higher temperature of exposition. The ash EC values increased in both species, *Pinus sylvestris* 0.89 to 2.20 ms and *Acer platanoides*, 0.67 to 2.05ms. Ash colour was in the ash produced at 150°C was yellowish; becoming black at 250-450°C and at 550°C the ash was white. Overall, there is an increasing trend of ML%, pH and EC, especially in *Pinus sylvestris*. Ash colour becomes lighter with the increasing temperature.