



Bonfires impacts on soil properties in Vingis Park (Vilnius, Lithuania)

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Bonfires are a common practice in urban parks, where diverse type of materials are burned such as wood debris, plastics, metals, among other hazardous materials. These practices are common around the world, but few information is available about the impacts of bonfires on soil properties under different land uses. The studied soil properties were: Soil Water Repellency (SWR), Aggregate Stability (AS), Soil Organic Matter (SOM) content, Total Nitrogen (TN), Inorganic Carbon (IC), pH, Electrical Conductivity (EC), extractable Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Phosphorus (P), Aluminum (Al), Manganese (Mn), Iron (Fe), Zinc (Zn), Copper (Cu), Boron (B), Chrome (Cr), Silicon (Si), Sulfur (S), Carbon/Nitrogen ratio (C/N), Ca+Mg/Na+K index (SPAR), Calcium:Aluminum index (Ca:Al) and Calcium:Magnesium index (Ca:Mg). Three different sites were selected for this study, *Pinus sylvestris* L. and *Quercus robur* L. (Site 1), one under *Aesculus glabra* Willd. (Site 2) and last one under mixed forest of *Pinus sylvestris* L. and *Acer plantanoides*. (Site 3). At each site 20 samples were collected (10 in bonfire and 10 in control). The results showed a high content of IC (Site 1), pH (Site 1), EC (All Sites), Ca (Site 1), Mg (Site 1), K (Site 1 and 2), P (Site 1 and 2), Al (Site 1 and 2), Zn (Site 1), Cu (Site 1), Cr (Site 1), Si (Site 1), S (Site 1), Ca:Al ratio (Site 1 and 2) and Ca:Mg ratio (Site 1 and 2) in burned soils. Bonfires reduced significantly SWR (Site 1), Mn (Site 2 and 3), Fe (Site 1) and B (Site 1). No significant differences were recorded in AS, TN, SOM, C/N ratio and Na, between burned and control sites. Overall, the most affected area was the site 1, especially because of the great increase of heavy metals.

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