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Dynamics of topsoil properties after a fire: small scale straw burning experiment

[1]Zumr, David, [1]Jerabek, Jakub, [1]Li, Tailin, [1]Noreika, Nina, [1]Laburda, Tomas, [1]Vrana, Michal, [2]Winkler, Jan and [2]Vaverkova, Magdalena

[1]*Czech Technical University in Prague, Czech Republic*
[2]*Faculty of AgriSciences, Mendel University in Brno, Czech Republic*

Abstract

A burning experiment on a grassland was made to observe the impact of a short fire on soil hydraulic properties and composition of emergent vegetation. The three years old grass was established on a former arable soil, on an experimental site Risuty, Czech Republic. The burning experiment was performed on a 5 x 5 m large plot, another plot was kept intact and monitored as a reference state. Risuty experimental site is equipped with a meteorological station and two sets of sensors monitoring the soil temperature and soil water content (depth from 10 cm to 45 cm installed under a reference grassed plot and the burned plot). The soil is classified as Cambisol, with loamy texture and no repellency. The grass was cut, sun dried, raked together and burned. The fire had a temperature above 650 °C and duration of approximately 10 minutes. Immediately after the fire and later in approximately weekly time steps the soil samples were collected to measure depth dependent soil properties such as organic carbon content, soil structure stability, hydraulic conductivity, soil bulk density and soil texture. Soil water and temperature regime, surface runoff, soil loss and vegetation cover were monitored in situ. The contribution will present the preliminary results of the after fire monitoring.

Keywords: Fire, Soil properties, Soil water regime, Emerging vegetation, Grassland

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