

# THE EFFECT OF THE USE OF WOOD ASH ON METALLIC ELEMENTS CONTENT IN THE FOREST FLOOR, SOIL AND BLUEBERRIES (*VACCINIUM MYRTILLUS*)

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The aim of our research was to analyze the influence of wood ash on metallic elements content in the forest floor, soil and blueberries.

Samples of blueberries, soil and forest floor for quantifying the chemical content of metallic elements were collected from three different sampling plots. The first sampling plot was fertilized with bottom ash in February 2018, but the second and third plots were fertilized with fly ash in February 2017. Three tons of wood ash were used for the area of one hectare.

Blueberry (*Vaccinium myrtillus*) samples were collected at the end of August and in early September 2018. The samples of soil and forest ground were collected at the end of October 2018. Soil samples were collected in two depth layers: 0-10 cm and 10-20 cm. After collecting, the samples of soil and forest floor were air-dried.

The unwashed blueberries were dried at 50°C and mineralized in the mixture HNO<sub>3</sub>:H<sub>2</sub>O<sub>2</sub> (6:2) using the closed microwave digestion system. The concentration of the elements in the sample solutions was determined by ICP-MS.

The air-dried and sieved soil samples were extracted in 1M HNO<sub>3</sub> solution. The concentration of metallic elements was determined by TXRF and as the internal standard was used gallium standard solution. The ash was dissolved in conc. HNO<sub>3</sub> and the forest floor samples were ashed in muffle at 550°C. The concentration of metallic elements was determined by TXRF.

The results show that the cadmium content in the first sampling plot fertilized with bottom ash is about 1.5 times higher values than in the second and third sampling plot cases fertilized with fly ash. The content of other metallic elements in blueberries from controlled and fertilized plots is similar.

The content of determined elements in the soil samples has no noticeable differences between the controlled and fertilized sampling plots.

In the first plot, the concentration of manganese in blueberries and soil samples was higher than in other sampling plots. The peaty soil collected in the first plot had similar content of nickel, zinc, strontium and lead in different depth levels. The content of copper was higher in the layer of depth 10-20 cm. In the second sapling plot, it was determined that the content of manganese, nickel, and lead is higher on all levels of depth in comparison with other plots.

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