



Chemical and mineralogical characteristics of regolith and soils derived from phonolites of Lower Silesia, Poland

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Phonolites are an igneous volcanic rocks with low silica content, indicating intermediate composition between felsic and mafic rocks. The aim of our work was to determine properties of soil profiles derived from phonolites occurring in Lower Silesia, Poland. The objects of investigation were shallow cambisol profiles located in the vicinity of old abandoned phonolite outcrop near Opolno Zdroj, south-west Poland. Soil and rock samples collected from profiles were analyzed for standard soil properties, and samples from selected soil horizons were analyzed for total chemical composition. Clay minerals were identified using XRD diffractograms.

Investigated soils indicated sandy and silty texture, pH (1M KCl) ranged from 3.59 to 6.29. Plant available forms varied from 0.6 to 16.2 mg/100 g for phosphorus, 8 to 27,2 mg/100 g for potassium and 2.95 to over 31 mg/100 g for magnesium, with no specific order in distribution of this elements. Chemical composition was analyzed only in A and C horizons, and in rock samples. Results show higher amount of SiO₂ (62.5 – 64.5 %) comparing to TAS classification. Amount of Na₂O+K₂O is from 8.5 to 11.5 % of all chemical composition, which is much lower than in TAS classification. XRD diffractograms show occurrence of Na-K feldspars and kaolinite. In lower amount micas, quartz and in some cases smectites were found. Results and discussion will be presented on poster.