



Comparison of the effects of biochar and activating biochar application on selected soil properties

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In our experiment we worked with three different type of biochar. Biochar represents carbonized organic matter. Its influence on soil and plant grow strongly depend on feedstock and conditions during combusted process. Different types of biochar were compared by pot experiment: as substrate we used biochar from sewage sludge, biochar from residual biomass, activated biochar. Moreover two other variants were fertilized by digestate and mineral fertilizer – DAM 390 (mixture of ammonium and nitrate nitrogen). Lettuce *Sativa L.* was used as indicator plant and experiment was located in growth box. Activated biochar was prepared in water environment and activating took two weeks. Several studies have demonstrated that biochar can have toxic properties and its application to soil can negatively affect plant yield. This toxicity is cost by aromatic substances which are native part of biochar. The concentration of these substances depends especially on temperature during pyrolysis. Our aim was eliminate aromatic substance by application of biochar which were activated. The biomass production, mycorrhizal colonization and dehydrogenase enzymatic activity was determined after end of experiment. The significant differences in all parameters were found between conventional biochar and activating biochar. Above all we didn't found statistical different in dehydrogenase activity between all treatments except substrates with activated biochar where was activity third higher than in comparison with other variants. The presented results indicate that the production and use of activating biochar represents potential technology for decrease in toxicity of conventional biochar.