

The influence comparing of activated biochar and conventional biochar on the soil biological properties

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In our experiment we have used biochar. This material is the product of the pyrolysis that has shown a positive effect on numerous physical and chemical soil properties. However, its influence on the biological component of the soil is very variable. A number of toxic substances that inhibit the soil productivity may be produced during pyrolysis process. The experiment dealt with the hypothesis concerning biochar toxicity reduction by simulating natural processes in the soil. Biochar has been exposed to aeration in the aquatic environment, enriched with nutrients and a source of native soil microflora. It has been created 6 variants in total, each with four replications. The soils samples have been placed in a phytotron for 90 days. Variants consisted of the soil with fertilizers adding (compost, biochar, activated biochar) and have been prepared as well as variants containing compost and biochar and activated biochar optionally.

The highest aboveground biomass production has been estimated in variants containing compost, while the lowest production - in the variants containing conventional biochar. During production comparing of the variants with the conventional biochar, activated biochar and control samples it has been evident that activated biochar promotes plant growth, and in contradiction conventional biochar inhibits it. We will approach to the same conclusions when comparing variants with a combination of conventional biochar + compost and activated biochar + compost. Mineral nitrogen leaching has been another investigated parameter. The highest leaching has occurred in the control variant, while the lowest - in the variant with activated biochar (the leaching of nitrate nitrogen has been negligible). Our results suggest that activated biochar has the potential; however, it is necessary to carry out similar experiments in the field conditions.