



Effect of different composts produced from municipal solid wastes on properties of soil humic substances

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Development of urban areas results in increasing of huge amounts of municipal wastes, which not only make up burdensome ballast, but their disposal can also affect negatively surrounding environment. From the other hand, municipal solid wastes (MSW) contain big amounts of organic fraction as well as components being source of nutrients, that should be referred to natural processes of recycling of organic residues. Thus, composting of MSW and their application to soil, especially on reclaimed areas, is the most rational way of their management. During composting of wastes, humification and mineralization processes lead to developing MSW compost of appearance reminding rich in humus soil material, which can be applied to improve soil fertility. These effects are connected first of all with presence of humic substances, especially humic acids, which are essential components of MSW composts. However, application of MSW composts to soil may result in both, positive and negative results. The latter are connected with content of heavy metals and other xenobiotics, which may be complexed by organic components. Therefore, understanding the processes undergoing in the soil environment after MSW composts application is extremely important. This paper presents results of chemical properties (IR, NMR, chemical elemental composition) of humic acids isolated from soil samples of plot experiment, where two different composts produced from municipal solid wastes were applied to sandy soil. Both composts were produced in different technology and in different regions (rural and industrial). Consequently, they differ in properties of humic substances and concentrations of some heavy metals. Composts were used non-recurrently in rates of 18,

36, and 72 t/ha, calculated as dry matter. Plots without fertilization, as well as those fertilized every year with mineral forms of NPK, were used as control. Triticale (X Triticosecale), cultivated in a 3-year monoculture, was used as the experiment plant. Soil samples were collected one month after application of composts, as well as each year after harvesting. Obtained results indicated that application of both composts caused an differences in properties of soil humic substances, that bcan be observed not only directly after compost application toi the soil.