



Arbuscular mycorrhizal colonization in soil fertilized by organic and mineral fertilizers

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The level of arbuscular mycorrhizal colonization of roots represents one of the best parameters for assessing soil quality. This special type of symbiosis helps plants to obtain nutrients of the distant area which are unavailable without cooperation with arbuscular mycorrhizal fungi. For example the plant available form of phosphorus is of the most important elements in plant nutrition. This element can't move (significantly) through the soil and it could be unachievable for root system of plant. The same situation also applies to other important nutrients and water. Colonization of individual roots by arbuscular mycorrhizal fungi has a direct effect on the enlargement of the root system but plant needs to invest sugar substance for development of fungi. It's very difficult to understand when fungi colonization represents indicator of good soil condition. And when it provides us with information "about plant stress".

The main goal of our work was to compare the effect of different fertilizers application on development of arbuscular mycorrhizal colonization. We worked with organic fertilizers such as biochar from residual biomass, biochar from sewage sludge and ageing biochar and with mineral fertilizer DAM 390 (mixture of ammonium 25 %, nitrate 25 % and urea nitrogen 50 %). Effect of different types of the above fertilizers on development of arbuscular mycorrhizal colonization was tested by pot experiment with indicator plant *Lactuca sativa* L. The highest ($P < 0.05$) colonization of roots was found in variant with biochar from sewage sludge. The lower colonization was recognized in control variant and variant with addition of mineral fertilizer. Our results indicate positive effect of modified biochar application to soil on increase in level of arbuscular mycorrhizal colonization of roots.