

Valorization of biomass into micronutrient fertilizers

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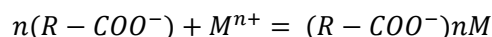
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Waste is a resource that could be valorised into fertilizers. Soil is a living organ of the biosphere and fertilization must constitute a vitalisation of the soil. And the best way is to combine organic and mineral fertilization. Soil consists of sand, loam, clay and humified organic matter.

In the present work the concept of new bio-based micronutrient fertilizers was presented. Micronutrient cations (Cu(II), Mn(II), Zn(II)) can be bound to the biomass by the process of biosorption, also called biological ion exchange. Biomass possesses some functional, usually negatively charged sites on its surface.



Micronutrient cations become bound to the biomass in the equilibrium, reversible process. If the biomass as the carrier of micronutrients would be added to soil, a reversible process will occur. Micronutrient ions would dissolve into the soil solution from where they can be taken up by plants.

Different types of the biomass were tested as the carriers of micronutrients. Biosorbent fertilizers were seaweeds, seaweed post-extraction residues, seeds of berries (raspberries, strawberries and blackcurrant), spent mushroom substrate, peat or bark.

The study was carried out in full research and development cycle: beginning with the process of biosorption, through production of fertilizers, and trials on their utilitarian properties.

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