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The micro-element dynamic in hortic antrosoils conditioned with polymeric materials

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The studies regarding the dynamic of microelements in hortic anthrosols (soils from glasshouses and solariums) are important both from scientific point of view and in special, for the implementation of durable ecological technologies of amelioration, conservation and superior capitalization of soil resources from protected areas (glasshouses and solariums). In case of hortic anthrosols, the application of intensive technologies for plants cultivation determined brusque and intense perturbations of equilibriums between microelements and mineral and organic components of anthrosols, which is reflected by a fast degradation of morphological and physic-chemical properties. But, in case of hortic anthrosols, the exploitation conditions determined a particular evolution of microelements, and of distributions and interactions way with soil components, respectively.
The conditioning and the amelioration of hortic antrosols with ecologic polymeric materials is one of the method approved in this moment and according with the opinion of most of specialists, represent one of method with large applications in modern agriculture. The utilization of polymeric materials to the conditioning of soils have been studied over 50 years, their effects on morphological, physical and chemical properties of soils being know, in special for agricultural and polluted soils.
Ours studied have been performed using soil profiles drawing from Copou-glass house, Iasi (Romania). Has been followed the modification of distribution for speciation forms of some micro-elements (Zn, Cu, Ni, Mn, Cr, P), between hortic antrosol horizons, and between chemical-mineralogical components of this, with the progressive salinization of superior horizons, in 2007-2008 period. For the experimental study have been used three types of water-soluble polymers, with different hydrophobicities: polyethylene glycol (molecular mass 2000, 4000 and 8000), vinyl acetate – ammonia maleate salt copolymer (AM-VA) and methylacrylate – ammonia maleate salt copolymer (AM-MMA). The separation, differentiation and determination of micro-elements speciation forms was done by combined solid-liquid sequential extraction (SPE) and extraction in aqueous polymer-inorganic salt two-phase systems (ABS) procedure, presented in some of ours previous studies. After extraction, the total contents of the micro-elements and fractions from these differential bonded by mineral and organic components of hortic antrosol have been determined by atomic absorption spectrometry. The specific interaction mechanisms of micro-elements with organic-mineral components of soils have been estimated on the basis of Raman and FT-IR spectra, recorded for fractions obtained after each extraction step. These data were correlated with those obtained by chemical analysis and UV-VIS spectrometry, and were used for to establish the type and weight of micro-elements speciation forms in studied antrosol.
The conditioning with polymeric materials determined a limitation of formation and extension rate of frangipane horizon, and of salinity in superior horizons respectively, which are mainly responsible by the geochemical segregation and degradation of soils from glass houses. Under these conditions, increase the weight of mobile speciation forms of micro-elements and will be facilitated their accessibility for cultivated vegetables.
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