Detoxifying ability of different soil humic acids in relation to herbicide trifluralin.

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It is widely known that humic acids (HA) play important role in the formation of bound residues of herbicides in soil. However , quantitative estimates both of the binding capacity of HA and resulting decrease in toxicity of the herbicide are still scarce.The purpose of the presented study was to estimate a binding capacity and detoxifying ability of HA extracted from the soils located in the different clymatic zones and of different land use in relation to herbicide trifluralin . The samples of HA were obtained from three soil types including native and agricultural soils (podzoluvisol [forest , plough] , greyzem [forest , plough] , chernozem [typical(plough) , meadow]) . Chemical characterization of HA samples included determination of elemental composition , average molecular weight , total acidity and aromatics/ aliphatics ratio. For monitoring of herbicide toxicity in the presence of HA biotesting was conducted with a use of wheat seedlings as a biotest . The obtained data allow to put the tested samples of HA according to their detoxifying ability to trifluralin in the following order : podzoluvisol forest < podzoluvisol plough < podzoluvisol garden < greyzem forest < greyzem plough < chernozem meadow < chernozem typical . The correlation analysis between calculated detoxifying coefficients of HA samples and their structural characteristics has shown , that detoxifying ability of HA increases with a decrease in average molecular weight of HA and with an increase in the amount of aromatic fragments in the composition of HA.