

Effect of polymer ameliorants on phytotoxicity of soil contaminated with different doses of heavy metals

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Polymer formulations based on hypane and humic preparations, proposed as soil ameliorants, have not been sufficiently studied regarding the effectiveness of soil restoration at different levels of pollution.

The objective of the work was to study the detoxifying ability of hypane and a binary formulation (hypane + Sakhalin humate (SH)) in soil contaminated with a complex of heavy metals (HM).

The research was carried out using the method of tablet phytotesting on changes in the length of the white mustard root under the influence of the HM complex (2, 4 and 6 EPC cations of copper, lead, zinc, cadmium) and subsequent treatment of soil agrocenosis from the Moscow region (Chashnikovo) with ameliorants. Hypane was added in the form of a 1% solution, the binary formulation consisted of a 1% hypane solution and a 0.1% solution of Sakhalin humate, the ratio was 20 ml per 100 g of absolutely dry soil.

The impact of different doses of HMs in the soil on plant development differed as expected: the introduction of HMs into the soil in doses of 2 and 4 EPC cations does not reduce, but even somewhat stimulates the growth of white mustard roots, demonstrating the effect of hormesis. Suppression of almost 25% was observed only at 6 EPC. The positive effect of treating contaminated soil with polymers is observed at all levels of HM load [fig.1].

The greatest detoxifying effect is observed against the background of 6 EPC - the length of the roots of white mustard seedlings in these variant increases by more than 25% in the presence of hypane and by 43.8% with the addition of the binary formulation of hypane + SH.

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Иллюстрации

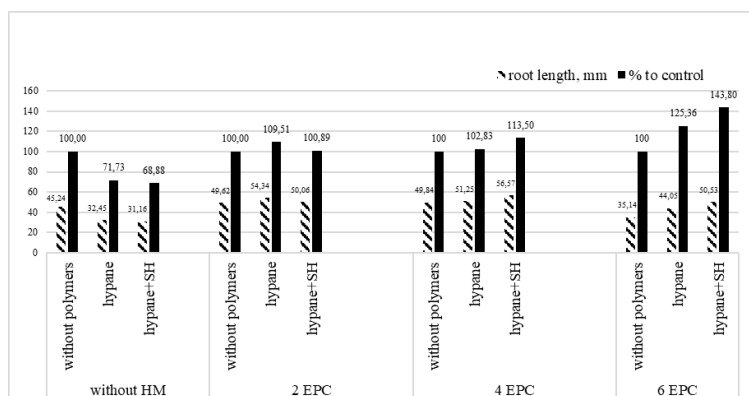


Рис. : Figure 1. The influence of polymer ameliorants on the change in the root's length of *S. alba* in the soil at different doses of HM contamination