

IMPACT OF SOIL CONTAMINATION WITH PESTICIDES ON INTERSPECIFIC GERMINATION

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It is well known that pesticide contamination of soil poses not only a threat to humans, but also to soil systems, changing the populations of microorganisms living in it, counteracting their self-purification and making it impossible to grow crops of some plants. Residues of pesticides or their derivatives can accumulate in the environment for a long time, which is especially evident in crop rotation. Different types of plants have a different ability to assimilate and accumulate pesticides, which is why it is possible to grow crops both safe and dangerous for human health on the same soil.

The purpose of this study was to determine the state of soil contamination with pesticides and analyze the possibility of growing other crops common in this area.

For a long time (3 years), corn has been grown on the meadow-chernozem soil located in the village of Ivano-Yarizivka (Dnipropetrovsk oblast) and intensive agrochemical treatments, including pesticides, have been used to protect it from pests. As a monitoring plant to check the quality of the land, the Green Coral salad was chosen, which is successfully grown on agricultural plots by local residents. The lettuce seeds (8 seeds were sown) were grown in a plastic cassette at room temperature (+21°C) for two weeks. The same conditions were used for the control sample of lettuce, which was grown in soil taken from a field that was not treated with pesticides. During the time allotted for growing, the sprouts were able to germinate only 1.5 cm in height with a root length of 0.7 cm. The stem and root parts were characterized by excessive thinness and flabbiness. At the same time, the control sample of lettuce showed satisfactory growth characteristics.

It is known that plant resistance to pesticides is determined by the physiological characteristics of the crop, growing conditions, availability of nutrients, depth of root penetration, light, humidity and temperature.[1] Taking into account the same characteristics and growing conditions of the monitoring and control plants, it can be concluded that the probable reason for the inhibition of the growth of the first plant is the presence of pesticide residues in the soil, the toxic chemical composition of which prevented its normal development, suppressing the availability of nutrients and causing deviations in the morphological structure. The results of the study showed that for further cultivation of plants in this area, it is necessary to regulate the use of pesticides in the soil and use new types of pest control that will become more environmentally friendly.

References:

1. Kumari P, Jasrotia P, Kumar D, Kashyap PL, Kumar S, Mishra CN, Kumar S and Singh GP. Biotechnological Approaches for Host Plant Resistance to Insect Pests. *Frontiers in Genetics*. 2022. Vol. 2. doi: 10.3389/fgene.2022.914029