

Influence of humic fertilizers on growth and biochemical parameters of lettuce plants

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Keywords: humic substances, humic fertilizers, lettuce plants, chlorophyll *a*, chlorophyll *b*, carotenoids, biomass, lipid peroxidation.

Abstract

Humic fertilizers (HF) are a separate group of organic fertilizers, which include humic acids (HA), fulvic acids (FA), their salts, as well as some mineral components. They combine the beneficial properties of macro- and microelements, adaptogens, biofungicides, plant growth stimulants. The aim was to study the effect of the introduction of a humic preparation obtained from peat into the soil and fertilizers “Sotka Potassium Humate” (Sotka) on the growth and biochemical parameters of lettuce plants. In the course of the work, a humic preparation was obtained from milled peat of the production site “Gorokhovskiy” (Kotelnichsky district of the Kirov region) of the branch of VyatkaTorf JSC by the method of leaching of humic substances (HS). The HS content in the obtained preparation was 23.4% (18.6% HA and 4.8% FA). It was found that the humic preparation from peat had a greater effect on the accumulation of pigments by plants than the Sotka HF. The effect was especially pronounced with a single application of the drug to the soil; over time, this effect decreased. The effect of using Sotka fertilizer was manifested when it was applied as a top dressing on the 30th day after planting the seeds. Based on the results of the study, a series of photosynthetic pigments in descending order of HF's effect on their accumulation has been constructed: chlorophyll *a* > chlorophyll *b* > carotenoids. Along with the accumulation of pigments, the introduction of HF into the soil led to an increase in growth parameters and lipid peroxidation in lettuce leaves, which indicates a greater intensity of biochemical processes occurring in plants under the influence of HS.

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