

Investigation of the quality of seeds of *Anethum graveolens* varieties Gribovsky and Lesnogorodsky by method of thermal analysis

© Elena V. Zueva,^{1*+} Sergey L. Belopukhov,² and Ravil F. Baybekov³

^{1,2} Department of Chemistry; ³ Department of Soil Science, Geology and Landscape Science. Russian State Agrarian University – Moscow Agricultural Academy Named after K.A. Timiryazev. Timiryazevskaya St., 49. Moscow, 127434. Russia. Phone: +7 (499) 976-16-28. E-mail: SBelopuhov@rgau-msha.ru

*Supervising author; +Corresponding author

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Abstract

The paper presents data on the study of the chemical composition of dill (*Anethum graveolens* L) using foliar treatment of vegetative plants with the growth-regulating agent Nicosulfuron [2-(4,6-dimethoxypyrimidin-2-ylcarbomoyl-sulfamoyl)-*N,N*-dimethylnicotinamide]. Field experiments were carried out at the agrobiological station of the Humanitarian and Technological University of the city of Orekhovo-Zuevo, Moscow Region in 2016-2018. The soil of the experimental plots is sod-podzolic medium loamy. Plants were treated with a solution of Nicosulfuron with a concentration of 0.1 g/l according to the active substance. It was found that foliar treatment of vegetative plants with a solution of 2-(4,6-dimethoxypyrimidin-2-ylcarbomoyl-sulfamoyl)-*N,N*-dimethylnicotinamide led to a change in the concentrations of macrocomponents in the seeds of dill varieties Gribovsky and Lesnogorodsky. Differential thermal analysis (DTA) of dill seeds was carried out using a thermoanalytical complex based on a derivatograph. The sample heating rate in a platinum crucible was 5, 10, and 20 degrees per minute. The DTA method showed a significant difference in the component composition of the organic matter of seeds of both varieties. 6 organic components can be grouped into two groups – with thermal decomposition temperatures of 200-400 °C and 400-600 °C. The treatment with Nicosulfuron leads to a shift in the accumulation of synthesized spare components of seeds towards easily degradable (up to 400 °C) components. This treatment effect is manifested in the fact that in the total mass of organic components of dill seeds (at the level of 87%), the fraction of readily decomposable organic matter is 64-70% for both varieties. In the control variant, without treatment with the drug, the biosynthesis of hardly degradable components, probably having a high molecular weight, and for high-molecular compounds having a high degree of polymerization, occurs. At the same time, the total activation energy for organic compounds in the control is 30-40% higher compared to the samples that were treated with Nicosulfuron.

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