

Nanochemistry and Nanobiotechnology

Nanosilver and Izatison May Improve Adaptability and Productivity of the Oat Plant Cultivar Nezlamny

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The growth intensity in the booting, the content of photosynthetic pigments in the leaves in the onset of panicles formation and the elements of grain productivity were investigating over two generations after the treatment of the oat seeds by the nanosilver preparation SS100 (**S**) [1], was kindly given to us. The preparation S was used also in the complex with Izatison (**Iz**) [2] and its constituents – the solvents dimethylsulfoxide, (**D**) and polyethylene glycol (**P**).

The stimulating effect of S on the stem growth (on 11,9 %; $P < 0,001$) was revealed in the first generation. This action of S enhanced doubly when it was used in the complex with Iz and D+P ($P < 0,001$). The corn crop per panicle (**W**) improved by S on 20,0 % ($P < 0,02$) mediated by the increase of the grains number per panicle (on 21,2 %; $P < 0,05$). The increase of chlorophyll *a* content (**C_a**) on 19,4 % ($P < 0,01$) and the carotenoids content (**C_{car}**) on 11,3 % ($P < 0,05$) was observed when S+D was used. It is found the chlorophyll *a* portion augmentation (**C_a:C_b**) for S+D and S+D+P (on 6,6 % and on 9,4 %; $P < 0,05$ and $P < 0,001$).

The acceleration of stem growth by S (on 30,2 %; $P < 0,001$) was shown also in the second generation, particularly for S+Iz, S+D, S+P (on 48,3-55,4 %; $P < 0,001$). The improvement of W by S (on 19,1 %; $P < 0,01$) was conditioned by the increase not only of the grains number per panicle but also its weight ($P < 0,001$). The decrease of **C_a** and **C_{car}** was revealed in the variant S+D+P (on 15,0 and 12,5 %; $P < 0,001$; $P < 0,05$); **C_b** – S+D, S+D+P (on 10,6 and 18,0 %; $P < 0,05$; $P < 0,01$). The increase of **C_a:C_b** ratio – in the variants S+P, S+D+P (on 3,4 and 3,9 %; $P < 0,01$).

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