of factors, namely: soil and climatic conditions, the growing season of plants, fertilizer system, meliorants and the level of soil contamination. So, observed the general trend, namely by increasing the levels of contamination of soil cadmium from 1 to 5 MPC in all variants, the indexes of the quality of roots (dry matter content, total sugars, ascorbic acid) has been decreased, but the concentration of nitrate was increased. Good biochemical parameters beetroots and lower nitrate levels have been received on the variants with liming of soil.

It was investigated, that the least mobility of cadmium in dark gray podzolic soil and the best biochemical of beetroots with the lowest concentration him in plants was the result of rational applying organic-mineral system of fertilizers against the background of liming soil at norm $N_{34}P_{34}K_{34}$ + Biohumus 2 t/ha + 5 t/ha $CaCO_3$.

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EFFECT OF BIOSTIMULANTS AND AZOTOFIT ON PEAS YIELD FORMATION

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Peas (Pisum sativum L.) are the main leguminous plants on Ukraine with high nutritional and economic value. Peas is a good predecessor owing to the ability to store nitrogen in the soil and increase its fertility. Peas are very light, water- and soil-demanding culture, so not realize its genetic productivity potential under adverse environmental conditions, owing to photosynthetic processes malfunctioning, changing in water and mineral status, inhibition of development. The usage of organic growth regulators

activates the methabolism and increase the crop. The aim of the work was to determine the effect of separate and combined application of biostimulants (Stimpo, Regoplant) and bioactivator (Azotofit) on the peas yield formation under the conditions of South Steppe of Ukraine.

The seeds of cirrosut-vulgatum morphotipe peas (Oplot variety) were used. Presowing separate and combined treatment of biostimulants (Stimpo, Regoplant) and Azotofit was carried out at recomended concentrations. Folia treatments were carried out at 2–3 stipules development stage (BBCH 12–13) and at inflorescence emergence stage (BBCH 51-59). It is controlled germination of pea seeds, the leaf area index and netto- photosynthesis, chlorophyll content, the root rhizobia number was determined and elements of the biological productivity structure of peas crop were accounted, according to common agrobiological methods.

Biostimulants Stimpo and Regoplant are composite polyfunctional preparations, products of fungi-micromycetes Cylindrocarpon obtisiucuilum 680 biotechnological cultivation from root system of ginseng and Aversectin. Azotofit contains living cells of genuine nitrogen-fixing Azotobacter chroococcum bacteria and their active metabolites. Mentioned preparations are sertificated according to the Organic standart of Ukraine.

It is established that the Stympo, Rehoplant and Azotofit under separate presowing treat of peas seeds stimulated the formation of nodules, which numbers increased by 11,7–23,5% in phase of 2–3 stipules and rich maximum at inflorescence emergence stage. Stympo and Rehoplant combined with Azotofit increased the numbers of nodules at 13,8–16,6% till flowering stage in comparison with variants under the separate application of biostimulants.

Optimization of peas nitrogen nutrition under the biopreparations application positively reflected on the formation of crops photosynthetic surface. Presowing treat of peas seeds and foliar treats with Stympo, Rehoplant and Azotofit increased leaf area index in 1.7 times during vegetation. It's noticed more active leaves surface formation under combined application of biopreparations than under separate one. Synergistic interaction of biostimulants (Stimpo, Rehoplant) with bioactivator (Azotofit) was observed in the processes of chlorophyll synthesis and

accumulation. The content of chlorophyll at leaves exceeded control index at 19%. It is shown that combined application of Stimpo, Rehoplant with Azotofit promoted the raise of netto-photosynthesis during peas vegetation at 5–47% and 8–24% respectively and in comparison with separate application variants.

Combined interaction of Stimpo, Rehoplant with Azotofit rised the beans number per plant by 8% to 28%, and weight of 1000 seeds at 4,4% to 6,3% respectively. Under separate application of Azotofit, Stimpo, Rehoplant, the biological yield of peas crop was 3,1; 3,4 та 4,2 t/ha. Whereas, under combined application of biopreparations the yield was (A+S) – 4,4 t/ha and (A+R) – 4,2 t/ha and its exceeded the control yield (3,1 t/ha) of peas.

Combined application of biopreparations Stimpo, Rehoplant with Azotofit revealed to synergistic effect on processes of peas biological yield formation under the conditions of South Steppe of Ukraine.

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THE INFLUENCE OF ENERGY WILLOW (SALIX VIMINALIS L.) CULTIVATION ON SOIL MICROBIOTA

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In the EU countries, the use of energy cultures is especially popular. This culture is used not only as an energy source but with the aim of bioremediation. What is more, different willow species are considered as promising plants for Ukraine's urban landscaping (Mazurenko, 2013). Phytostabilization is one of these low impact remediation options that use plants to simultaneously stabilize soil structure and reduce negative contaminant effects (Kidd et al., 2009). The aim of our research has been to study soil