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EVALUATION OF BIOLOGICAL ACTIVITY OF MICROELEMENT COMPLEX AVATAR-2 FOR ITS APPLICATION FOR PRE-TREATMENT OF WHEAT SEEDS

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In Institute of bioorganic chemistry and petrochemistry of the National Academy of Sciences of Ukraine jointly with the Scientific Production Company "Avatar" conducting research aiming to develop new effective preparations with anti-stress and growthstimulation action for many crops, including cereals by growing them on different — the optimum and deficit agrochemical background.

Developed preparations contains micro- and ultramicroelements, which chelated by three- and twokarbonic organic acids, which are natural to plants and quickly involved in their metabolism.

Organochelates of biogenic elements derived from colloidal solutions by chelation of nanoparticles (30-70 nm) organic acids to complete the transition elements in ionic form. The resulting aqueous organochelates solutions have an extremely high degree of purity. One of the latest developments — a microelement complex with the working title "Avatar-2", which contains Zn, Mn, Cu, Fe, Mo, Co, Mg, Ge, V, La, Ni, Ti, Ag, Se, I-citratochelates and boron in the form of boric acid. The presence of silver, copper and iron ions provide to preparation additional antimicrobial properties.

The aim of the research covered in this article was to determine the efficacy of microelement complex avatar-2 for pre-treatment of winter wheat seeds varieties Smuglyanka for its cultivation on various agrochemical backgrounds, including — for the acute shortage of phosphorus in the feed.

It was shown in result of pot experiment conduct:

1) Microelement complex avatar-2 has growthstimulation and antioxidant effect that in the field conditions should enhance the corn productivity of plants and their resistance to various stress-factors; 2) The preparation increases the nitrogen utilization by plants of winter wheat (removal above the control at 6-15 %), increases bearing of phosphorus — by 9-19 % at full NPK, to 19-29 % at 0,5 n NPK and 26 % — for growing on the substrate with $Ca_3(PO_4)_2$ and slightly — potassium. This indicates the possibility in a industrial conditions for the cultivation of winter wheat using avatar-2 reduced by 20-30 % norms of application of phosphate fertilizers and nearly half — preplant (autumn) of nitrogen fertilizers; 3) avatar-2 promotes acid secretion and acidofication activity, as well as significant improvement in morphological parameters of wheat root system . This leads to improved mineral nutrition of plants, increased solubility and, therefore, the plants availability to

phosphorus of hardsoluble mineral soil phosphates and perhaps hardsoluble mineral compounds that contain essential for plant biogenic micronutrients.