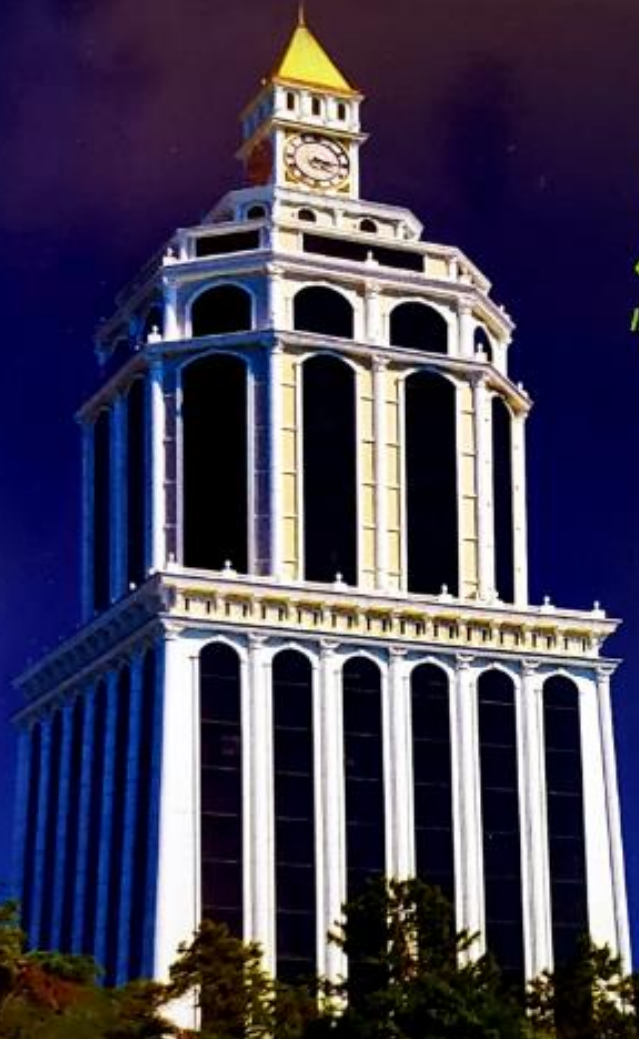


14- 18 May, 2019

# III WORLDWIDE CONGRESS

of mineral fertilizer  
and pesticide producers

BATUMI, SHERATON HOTEL

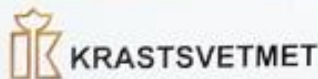


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## ORGAN-MINERAL FERTILIZERS “ELDOROST”

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Kazakhstan is an agrarian country and having the urgent need in various products for plant growing it does not produce them, but import.

Kazakhstan is a key exporter of grain on the international market and the area of cereal plantings exceeds 80% (16.5 mio. ha out of 21.5 mio. ha) of the area under crop, but there is no domestic plant growth regulator permitted for use in the Kazakhstan for cereals.

Crop yield in Kazakhstan strongly depends on natural and climatic conditions. Special plant growth regulators are used in developed countries to minimize such dependency. They increase **germinability**, **germinating force**, **root formation**, **drought**, **frost resistance** and **resistance to other adverse environmental conditions**.

One of the most efficient methods used to increase soil fertility and crop yield is the use of organic fertilizers. They help increasing the content of humus in soil, soil structure and avoiding many adverse consequences caused by the use of chemicals. In general, environmental balance cannot be maintained without the use of organic fertilizers for farming purposes.

Therefore, development of new high-efficiency and low-cost multipurpose organic plant growth regulators (PGR) with complex features (regulating, **antistress**, **immune-stimulating**, **moisture-retaining**, etc.) on the basis of **humic** and **fulvic** acids becomes very urgent since the need in high-efficiency **phytoregulators** is growing day in and day out.

We have produced an innovative domestic plant growth regulator from highly oxidized brown coal and lowland peat by extraction using alkali solutions adding a set of **aminoacids**, **natural phytohormones** and **micro- and macroelements**. The distinguishing feature and scientific novelty of the proposed project as compared to the traditional ones is the use of natural **aminoacids**, **phytohormones** extracted from vegetable raw materials and addition of **micro- and macroelements** in certain proportions.

In-depth laboratory and demonstration field (**microplot**) comparative tests on cereals, vegetables and other crops demonstrated a high efficiency of the new domestic multipurpose organic plant growth regulator. The patent search showed that the tests are highly patentable and we currently prepare a Kazakhstan patent application.

A significant growth of foodstuff produced without the use of any mineral fertilizers or with a limited quantity thereof can be seen in the world agricultural industry since recently. The well-known agricultural technologies that made a good showing are the technologies using **biomates**.

Due to the biological activity of **humic** substances (HS), they are used as plant growth regulators or **microfertilizers**. HSs are successfully used as structure-forming agents and soil ameliorants, they activate activity of soil **microorganisms**. HSs can be used as detoxing agents in contaminated areas.

The greatest value for the production of fertilizers, as a rule, low-quality coals, which are **got by** the most economical open method in many cases. Weathered mines of low quality coal are mined by the open method. These coals are of great value for the production of organic fertilizers and plant growth stimulants. High humidity and ash content are not an obstacle to the use of coal in agriculture: high humidity eliminates the need to moisten the coal in the production of fertilizers, the mineral part contains trace elements (boron, manganese, zinc, etc.) necessary for normal plant growth.

In accordance with this, we obtained a new domestic plant growth regulator by extracting alkaline reagents from highly oxidized brown coal and lowland peat with the addition of a complex of amino acids, natural phytohormones of natural origin and micro- and microelements. A distinctive feature and scientific novelty of the proposed project from the traditional methods are the use of natural amino acids, phytohormones isolated from plant materials with the inclusion of micro and macro elements in a specific recipe. The extraction of salts was carried out at room temperature for prevent thermal decomposition of HA and FC. The reaction is exothermic; therefore, the process of coal extraction takes place at a temperature of 80–85 °C for two hours in an extractor with a constantly working mixer. After the extraction process is completed, the extractor mixer is turned off and the fertilizers are cooled by air. A concentrate of salts of humic acids (~11%) is obtained, then a complex of minerals and trace elements, amino acids are added. (The technology of obtaining a new universal organic fertilizer is not described in detail, because the application for a patent of the Republic of Kazakhstan is currently being processed).

The product is used as a working solution, which is prepared by diluting the original concentrate or in tank mixtures.

The study the effect of a new organic fertilizer codenamed EldoRost on sowing qualities, yield, and also on the fungal and bacterial microflora of grain seeds (wheat, rice), vegetables (potatoes, carrots, cabbage, cucumbers, tomato), soybeans and fodder crops (Sudanese grass) were conducted in laboratory and field conditions. The new product (growth stimulator) "EldoRost" showed a higher stimulating efficacy in all cultures in comparison with the standard product.

"EldoRost" is a natural regulator of plant growth and development and intended for all types of crops in any soil and climatic zones. It promotes the cultivation of environmentally friendly agricultural products and reducing the content of heavy metals, radionuclides and nitrates in products. It is allowed to produce better and more environmentally pure products (with a high content of carbohydrates, proteins, lipids and other valuable substances). The national universal organic plant growth regulator is a natural products what has valuable antioxidant properties. It is actively involved in the neutralization and elimination of toxins.

«EldoRost» is a natural product and refers to preparations which increase germination and yield. It is suitable for all kinds of crops in any soil-climatic zones. Also, it promotes the cultivation of environmentally friendly agricultural products and reduces of heavy metals, radionuclides, and nitrates in products. Domestic universal organic regulator of plant growth allows to produce more qualitative and environmentally friendly products (with a high content of carbohydrates, proteins, lipids and other valuable substances).

Applies for presowing treatment of seeds, foliar feed plants during the growing season, for post-harvest treatment of the soil. The plant growth regulator dissolves in water completely, it allows to use it by applying sprayers and drip irrigation systems.

Application of the given product in agricultural production allows to raise productivity, germination, to get a rise of a crop with improvement of quality and stability of plants to diseases and to adverse conditions (a drought, frosts, salinity), to restore and increase of soil fertility and to activate of soil microorganisms, also to increase germination rate of seeds and root system, to improve the survival rate of seedlings, saplings, and sprouts when transplanting. It increases the water-holding capacity of the soil, takes an active part in the formation of humus, speeds up the synthesis of chlorophyll and ripening by 10-12 days. It contributes to increasing the effectiveness of mineral fertilizers and pesticides, reducing their use by 30-50%. The product has pronounced antioxidant properties, takes an active part in neutralizing and removing toxins. It can be used in organic farming to production of environmentally friendly products.