THE EFFECTS OF MICROORGAMISMS AS BIOSTIMULANTS ON VEGETATION GROWTH IN CHANGING ENVIRONMENTAL CONDITIONS IN EGYPT AND BELARUS

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The use of microorganisms as a plant growth stimulator in the near future may become the only environmentally appropriate method for growing vegetation, especially in agriculture in Egypt, as a country with a tropical desert climate (about 4% of the territory of Egypt is involved in agriculture) and Belarus, as a country with develop-ing agriculture and the pronounced impact of industry on the environment. Microorganisms, unlike synthetic ferti-lizers, do not cause pollution of soil and groundwater with nitrogen and phosphorus compounds, which is extremely important under the conditions of today's technogenic and anthropogenic pressure on the environment, and an in-crease in the number of useful soil microflora favorably affects the state of plants.

Keywords: associative microorganisms, biostimulants, vegetation, environment.

In modern conditions, the negative impact on all living elements of the environment is most harmful to vegetation. The "Industrial Revolution" of the 20th century led to pronounced environmental changes that are observed in our time: a sharp release of heavy metals and hydrocarbons into the atmosphere had a detrimental effect on the vital activity of vegetation, which led to a sharp decrease in biomass and other negative consequences on the ecosystem. In addition, one of the most common causes of environmental pollution is the introduction of large amounts of phosphorus and nitrogen fertilizers into the soil, whose frequent use leads to pollution of groundwater and subsequent death of animals, and the emergence of new large-scale environmental problems [1, 2].

Modern biostimulants of vegetation growth based on microorganisms in conditions of environmental tension in Belarus, as a country with developed heavy industry, are the most preferred method for achieving rapid growth and development of plants, especially in Belarus agriculture, where synthetic fertilizers are used in large quantities. For example, several biostimulants based on nitrogen-fixing and phosphate-mobilizing bacterial strains are already being used. These microbial preparations have properties useful for vegetation: fixation of atmospheric nitrogen, improvement of phosphorus nutrition of plants, activation of the synthesis of phytohormones and restriction of the development of phytopathogens [1, 3].

In Egypt, the usage of chemical fertilizers has increased dramatically since 2010. As a subsequence to this increase, carbon dioxide emission has also increased and soil pollution rate sharply increased. In addition to that, the huge increase in Egypt’s population leads to the question of how we’re going to supply the amount of food needed to feed everyone if we kept on this unsustainable agricultural behavior. From here, immerged the need for finding eco-friendly alternatives [4, 5].

Biostimulants are one of the very promising solutions that are being used currently. PGPRs (Plant growth-promoting rhizobacteria) are a subcategory of biostimulants representing a group of bacteria located in the rhizosphere area and are able to enhance the growth of plants. The mechanism of plant-growth promotion is briefly through: (i) facilitation of nutrients acquisition as phosphate and iron, (ii) modulating phytohormones levels as IAA and Gibberellins and (iii) sometimes even being used as biocontrol agents through decreasing the inhibitory effects of various pathogenic agents on plant development [6, 7].

The time has come to apply these new agricultural practices as long as we’re aware and we still have the chance to do so. Scientists from all around the world are developing deeper understanding of our environmental situation and working hard to offer more sustainable alternatives so that our consumption of today’s resources wouldn’t affect the ecological state of the planet and the health of tomorrow’s population.

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MONITORING OF POST-VACCINAL IMMUNITY AMONG THE PRESCHOOL-AGED CHILDREN OF MINSK

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Post-vaccination immunity is the basis of anti-epidemic measures. It is carried out as part of the national vaccination program, in order to achieve collective immunity sufficient to prevent the development of epidemics for this infection. Since the formation of post-vaccination immunity is largely mediated by the individual characteristics of the body and the reactivity of the immune system in a certain period of time, the provision of collective immunity requires monitoring of post-vaccination immunity in children.

Keywords: vaccine, vaccination, immunity, children, infections, monitoring, statistics.

Objective: to monitor post-vaccination immunity in preschool children in Minsk.

Materials and methods: the study took: the national vaccination calendar of the Republic of Belarus, the calendar of preventive vaccinations according to epidemic indications, reports of Minsk children's clinics on conducting preventive vaccinations of preschool children, at the expense of the budget and on a paid basis (considering that all vaccinations included in the national calendar is done for free), Decree of the Ministry of Health of the Republic of Belarus No. 42 of 05/17/2018, Decree of the Ministry of Health of the Republic of Belarus No. 191 of 02/27/2014, Decree Ministry of Health of the Republic of Belarus No. 49 dated 05/31/2011, order of the Ministry of Health of the Republic of Belarus No. 852 dated November 14, 2006.

Results: Thanks to effective vaccination programs for children, there is a significant reduction in many infectious diseases in our country:

1. There are no cases of polio, which previously led to the development of malformations and disabilities.
2. The incidence of rubella decreased by 43,000 times (from 43,000 cases in 1997 to 1 case in 2018).
3. The incidence of measles has decreased by more than 1,000 times (in the pre-vaccination period (before 1967), about 70,000 cases were recorded per year, in 2018 - 53 cases), the incidence of measles was due to 5 imported cases from countries where measles is registered : Russian Federation, Poland, Georgia, Ukraine and Israel (out of the number of reported measles cases, 38 were related to imported ones).
4. Incidence of diphtheria - in the pre-vaccination period (before 1957) 14,000 cases were recorded, since 2012 there have been no cases.
5. The incidence of viral hepatitis B - 14 times (from 1266 cases in 1998 to 76 in 2018).
6. Tetanus morbidity - isolated sporadic cases of tetanus were recorded, since 2011 there have been no cases.