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ZAMONAVIY INNOVATSION TADQIQOTLARNING DOLZARB MUAMMOLARI VA RIVOJLANISH TENDENSIYALARI: YECHIMLAR VA ISTIQBOLLAR

mavzusidagi Respublika ilmiy-texnik anjuman materiallari to‘plami

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“Zamonaviy innovatsion tadqiqotlarning dolzarb muammolari va rivojlanish tendensiyalari: yechimlar va istiqbollar” mavzusidagi Respublika ilmiy-texnik anjuman materiallari to‘plami – Jizzax: O‘zMU Jizzax filiali, 2024-yil 17-18-may. 461-bet.

Respublika miqyosidagi ilmiy-texnik anjuman materiallarida zamonaviy innovatsion tadqiqotlarning dolzarb muammolari va rivojlanish tendensiyalari sohasidagi innovatsion tadqiqotlar aks etgan.

Globallashuv sharoitida davlatimizni yanada barqaror va jadal sur’atlar bilan rivojlantirish bo‘yicha amalga oshirilayotgan islohotlar samarasini yaxshilash sohasidagi ilmiy-tadqiqot ishlariga alohida e’tibor qaratilgan. Zero iqtisodiyotning, ijtimoiy sohalarni qamrab olgan modernizatsiya jarayonlari, hayotning barcha sohalarini liberallashtirishni talab qilmoqda.

Ushbu ilmiy ma’ruza tezislari to‘plamida mamlakatimiz va xorijlik turli yo‘nalishlarda faoliyat olib borayotgan mutaxassislar, olimlar, professor-o‘qituvchilar, ilmiy tadqiqot institutlari va markazlarining ilmiy xodimlari, tadqiqotchilari, magistr va talabalarning ilmiy-tadqiqot ishlari natijalari mujassamlashgan.

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Mazkur to‘plamga kiritilgan ma’ruza tezislarining mazmuni, undagi statistik ma’lumotlar va me’yoriy hujjatlarning to‘g‘riligi hamda tanqidiy fikr-mulohazalar, keltirilgan takliflarga mualliflarning o‘zlari mas’uldirlar.

DETERMINATION OF PLANT GROWTH-PROMOTING BACTERIA IN EXTREME CONDITIONS FROM THE RHIZOSPHERE OF *FERULA KUHISTANICA* KOROVIN

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Annotation. The use of eco-friendly fertilizers is one of the most important aspects of the cultivation of medicinal plants. *Ferula kuhistanica* is one of the medicinal plants grown under such plantation conditions. Therefore, researching the microbiome of this plant, identifying promising strains, and using it as biocontrol is one of the urgent tasks of today. This article describes the growth and development-stimulating properties of certain bacterial strains isolated from the rhizosphere of *Ferula kuhistanica* under stress conditions.

Key words: *Ferula kuhistanica, Rahnella aquatilis, Paenibacillus sp., Enterobacter sp.,* biocontrol.

Intensive farming practices aimed at high yields and quality crops have traditionally required extensive use of chemical fertilizers, which are expensive and have a negative impact on the environment. There is a growing interest in ecologically clean, sustainable, and organic agricultural practices. In many cases, the use of bio-fertilizers, which contain beneficial microorganisms rather than synthetic chemicals, has been found to enhance plant growth and improve environmental health and soil fertility by improving nutrient availability.

Many studies have reported improved plant growth and development after treatment (seed or root) with microbial strains capable of producing plant growth regulators. Isolates isolated from the rhizosphere microbiome of *Ferula kuhistanica* include antibiotic producer (*Paenibacillus polymyxa*) [1], catalase positive (*Enterobacter cancerogenus*) [2], and abscisic acid (ABA) producer (*Bacillus subtilis*), glyphosate degrader (*Enterobacter cloacae*) [3], KCN-resistant (*Enterobacter cancerogenus*) phosphate solubilizer, siderophore, and amylase producer (*Enterobacter cloacae, Paenibacillus polymyxa*) diazotroph (*Rahnella aquatilis, Paenibacillus polymyxa, Enterobacter cloacae*) (*Acinetobacter schindleri*) [4] strains indicate that the root microbial community of *F. kuhistanica* is rich and

effective and has bright prospects for future use as biocontrol in agricultural crops and medicinal plants.

Salinity, which is one of the consequences of global climate conditions, is one of the current problems that is spreading widely in the world. Climate change and increased salinity as a result of the use of chemical fertilizers cause a number of problems, such as a decrease in soil fertility and a decrease in the yield of agricultural crops.Traditional methods of reclamation of saline soils are less effective, which in turn has a negative effect on agroecosystems. In this context, the development of sustainable methods that increase the productivity of saline soils without harming the environment is one of the urgent problems of today. In recent years, in order to increase productivity in saline soils, many studies have been conducted on the isolation, study, and use of ST-PGPR - plant growth-stimulating salt-resistant rhizobacteria. Due to the large accumulation of Na ions in plant tissues in the saline area, negative changes occur in the growth and metabolism of plants. The accumulation of these Na ions in plant tissues slows down photosynthesis and increases the formation of reactive oxygen species.

Several promising PGPR strains belonging to the genera *Bacillus*, *Enterobacter*, *Rahnella*, *Acinetobacter*, and *Paenibacillus* were isolated from the root rhizosphere of *Ferula kuhistanica*. The morphological, cultural, physiological, and biochemical characteristics of these strains were studied. *Bacillus subtilis* 1, 2, *Paenibacillus sp.*, and *Enterobacter sp.*, bacterial strains were found to grow at a 2.56 M NaCl concentration when inoculated in nutrient media with different salt concentrations.

In conclusion, by creating and using new biopreparations based on these bacterial isolates, it helps to protect the *Ferula kuhistanica* plant from stress factors on saline soils under plantation conditions and to improve growth development. In addition, using plant growth promoting rhizobacteria inoculation will save nitrogen fertilizers, reduce the necessity for chemical fertilizers, and prevent environmental pollution.

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