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CLEANING PRODUCTION WASTE WATER USING FILTRATION FIELDS

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Аңдатпа. Тұщы судың маңызы үнемі артып келеді; су - құнды табиғи байлық. Әдетте, егер су ресурсы күнделікті өмірде және өндірісте ұтымды пайдаланылмаса, ластану органикалық және минералды табиғат заттарымен жүреді. Бұл ағынды су. Мазмұнына байланысты мұндай су қауіпті болуы мүмкін, оған улы заттар мен түрлі жұқпалы аурулардың қоздырғыштары кіреді. Сондықтан адамзаттың экологиялық проблемаларының бірі ағынды суларды тазарту болып табылады. Ол үшін айтарлықтай шығындарды қажет етпейтін және оларды тиімді тазартуды қамтамасыз ететін осындай тазарту әдісін табу керек. Жұмыс барысында балдырлар оларды судың органолептикалық сипаттамаларын жақсартуда қолдану мақсатында зерттелді. Белгілі бір микроорганизмдердің су ортасын тазарту қабілеті биотехнология, микробиология және экология сияқты көптеген ғылыми зерттеулердің тақырыбы болып табылады.

Түйінді сөздер: ағынды суларды тазарту, биологиялық тазарту, микроорганизмдер.

Аннотация. Значение пресной воды постоянно растет, вода - это ценный природный ресурс. Как правила при не рационально пользовании водным ресурсом в быту и промышленности происходит загрязнения веществами органической и минеральной природы. Это сточная вода. В зависимости содержания такая вода может быть опасна и включать токсичные вещества и возбудители различных инфекционных заболеваний. Поэтому одной из экологических проблем человечества является очистка сточных вод. Для этого необходимо найти такой способ очистки, который не потребует существенных затрат и обеспечит эффективное их очищение. В ходе работы были изучены водоросли с целью использования их в улучшении органолептических показателей воды. Способность некоторых микроорганизмов отчищать водную среду объектом изучения многих наук, таких как биотехнология, микробиология и экология.

Ключевые слова: сточные воды, очищение, биологическая очистка, микроорганизмы.

Annotation. The importance of fresh water is constantly growing; water is a valuable natural resource. As a rule, if the water resource is not used rationally in everyday life and in industry, pollution occurs with substances of organic and mineral nature. This is waste water. Depending on the content, such water can be dangerous and include toxic substances and pathogens of various infectious diseases. Therefore, one of the environmental problems of mankind is wastewater treatment. To do this, it is necessary to find such a cleaning method that does not require significant costs and ensures their effective cleaning. During the work, algae were studied in order to use them in improving the organoleptic characteristics of water. The ability of some microorganisms to purify the aquatic environment as an object of study in many sciences, such as biotechnology, microbiology and ecology.

Key words: waste water, purification, biological purification, microorganisms.

The aim of this work is to create biological filtration fields for the treatment of industrial wastewater. The problem of wastewater treatment is one of the pressing topics of our time. Modern industry needs a lot of water. Its consumption is hundreds of times greater than all together with natural substances taken. [1]

The complexity and diversity of the problem of rational use of natural resources and environmental protection forced a person to take a close look at nature, which has natural mechanisms of self-healing and self-preservation.

Scientists are actively connecting natural mechanisms, creating barriers to pollution of water bodies and the atmosphere. We believe that if there is pollution, then there must be a purification method, and best of all, if this method is biological, because this method will provide the greatest efficiency, as well as low cost. Plants can serve this way. To be cleaners of water sources from pollution - this is what nature has entrusted the highest responsibilities to higher water plants. The reed is perhaps the best at handling this. Reed is a large perennial and unpretentious plant. It is because of its unpretentiousness that it is widespread and extremely widespread in all parts of the world. (fig. 1) [2]

Figure 1. Common reed

Reed grows along the banks of ponds, rivers, lakes, along the coasts of seas, artificial reservoirs and in floodplains periodically flooded with floods. What facts indicate that reed is a strong natural cleaner of water bodies? Reed is able to grow along the shores of the seas, in the water of salt estuaries, lakes, near sulfur springs, in water bodies heavily polluted by industrial effluents. This phenomenon is explained by some biological features of the structure and development of the reed. The hollow shoots of reed, which resemble knotted straw, grow every year from the buds of renewal, occurring on long, knotty and tubular underground rhizomes. Roots 5-6 cm thick have large internal air cavities blocked by transverse diaphragms. It is these air cavities that help the reed to adapt to the unfavorable gas composition of swamp soils.

And in such soil contains up to 70% methane, about 10% carbon dioxide, 2% hydrogen sulfide and about 17% nitrogen and 1% hydrogen, and nitrogen and hydrogen are in active reducing

form. It is noticeable that in the composition of the soil air of the marshes there is almost no oxygen, and the carbon dioxide content is greatly increased. [3]

Especially good cane ordinary develops and grows luxuriantly where there are more sulfides and hydrogen sulfide. At three to five lower nodes of the shoot, which are covered with water, a fairly dense fibrous network of additional water-air roots develops. Their osmotic surface often exceeds the area occupied by plants, five to ten, and sometimes fifteen times, researchers noticed.

In plant life, these roots are a mechanical filter through which all kinds of fine particles in water are retained: mineral and organic suspended solids, small plant and animal fibers, sand, clay, oil and fat emulsions, colloid flakes and so on, and the water is purified from these solid components. However, the function of the additional water-air roots of the reed is not limited only to the mechanical treatment of water from particles suspended in it. Using these roots, plants extract from water not only various nutrients dissolved in it for reeds, but also ballast substances and even toxic substances and salts for water bodies and rivers. Mercury and lead are especially dangerous to living organisms. The tragic effects of mercury compound poisoning were recorded in Japan, where the accumulated mercury in marine animals was used by humans for food. [4]

Thus, in order to solve the cleaning problem, we propose the creation of filtering fields.

Reeds with a density of 20 plants / m2 should be planted in the upper layer of the soil. Below are layrogravia and sand layers consisting of particles of various diameters. At the very bottom, place the pipes used to drain the treated water using a pump system. Cover the bottom and walls of the field with an impermeable material. From which it follows that the wastewater pumped into the cleaning field is first subjected to biological treatment with a layer of reed, then mechanically treated in layers of sand and gravel, after which they are pumped out using a system of pipes and pumps. (Fig.2) [5]

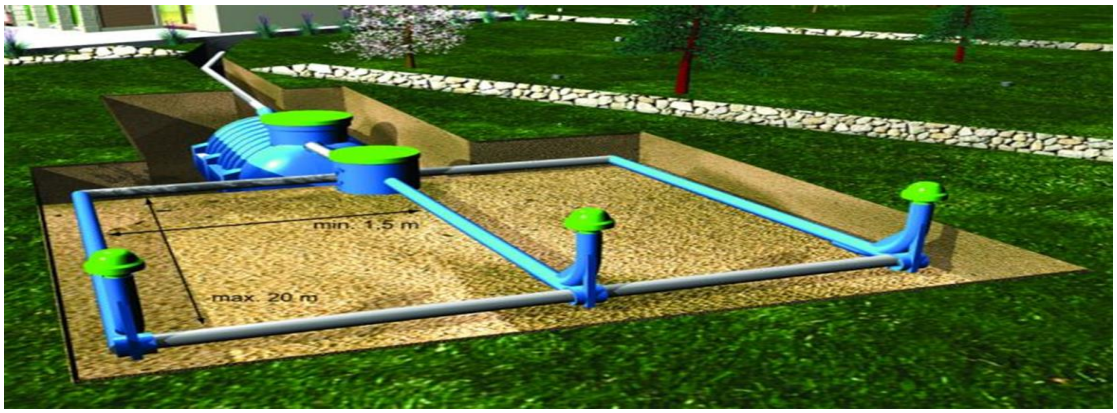

Figure 2. Computer model of the principle of the action of filtering fields

In conclusion, we can say that this method does not require large expenditures either for the construction of the field or for its operation, the duration of which can reach from 30 to 50 years.

This method has a positive effect on the environment and does not pollute the biosphere, as well as solve the big problem of wastewater treatment and return of clean water to the production process.

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BIOINDICATION OF AGROCENOSIS. INFLUENCE OF MICRONUTRIENTS AND MACRONUTRIENTS FOR THE DEVELOPMENT AND GROWTH OF CULTIVATED PLANTS

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Аңдатпа: Микроэлементтер мен макроэлементтердің мәдени өсімдіктердің дамуы мен өсуіне әсерін зерттеу нәтижесінде теңдестірілген топырақ өсімдіктердің үйлесімді дамуы мен өсуіне үлкен әсер ететіндігін көрсетті, себілген алқаптар өсірілген дақыл үшін оңтайлы болуы керек, ал биоиндикация қоршаған ортаның сапасын бағалау үшін үлкен маңызға ие.Тақырыпты таңдау дәнді дақылдардың өсуін зерттеу мәселелерінің эндемикалық маңыздылығы мен өзектілігіне сәйкес жасалды, Ақтөбе облысы Қазақстандағы дәнді дақылдардың ірі өндірістік және ғылыми базасы болып табылады. Оның өзектілігі сонымен қатар талдаудың қарапайымдылығымен, жылдамдығымен және арзандығымен байланысты. Биоиндикация топырақтың макро және микроэлементтеріндегі кемшіліктерді тез анықтауға және тапшылықты немесе артықты тез жоюға мүмкіндік береді.Агроценоздың биоиндикациясының өндірістік маңызы бар және ол экономиканың дамуына тікелей әсер етеді.

Түйін сөздер: макроэлементтер, микроэлементтер, биоиндикация, егілетін алқаптардың сапасы, биогенді элементтер, дәнді дақылдар, агроценоз, агроценоз, сұлы (*Avena sativa*) биоиндикациясы.

Аннотация: Изучение влияния микроэлементов и макроэлементов на развитие и рост культурных растений показало, что на гармоничное развитие и рост растений огромное влияние оказывает грамотно сбалансированный грунт, посевные поля должны быть оптимальными для возделываемой культуры, а биоиндикация имеет огромное значения для оценки качества окружающей среды. Выбор темы был произведен в соответствии с учетом эндемичной значимости и актуальности вопросов изучения роста злаковых культур, Актюбинская область является крупной производственной и исследовательской базой зерновых культур Казахстана. Ее актуальность обусловлена также простотой, скоростью и дешевизной проведения анализа. Биоиндикация позволяет быстро обнаружить недостатки макро и микроэлементов почвы и быстро устранить дефицит или избыток.Биоиндикация агроценоза имеет производственное значение и напрямую влияет на развитие экономики.